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HAWARA, BIAHMU, AND ARSINOE

WITH THIRTY PLATES

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BY

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"Then will this consecrated land, the abode of shrines and temples, be densely filled with graves and corpses. O! Egypt, Egypt! of thy worships only rumours will be preserved, and even these will seem incredible to thy coming generations; only words will be preserved on the stones to tell of thy pious deeds, and Egypt will be inhabited by the Scythian or Indian or other such from the neighbouring barbarian land."—*Attributed to Appuleius; transl. Mommsen.*

CONTENTS.

INTRODUCTION.

PAGE

1. CONDITION OF THE FAYUM IN PAST TIMES, . 1
2. WORK AT ARSINOE, ... 2
3. WORK AT HAWARA, ... 3
4. CIRCUMSTANCES OF THE PRESENT WORK, . . 3

CHAPTER I.

The Labyrinth.

5. THE SITE, ... 4
6. THE REMAINS, ... 5
7. MATERIAL FOR RESTORATION, . . . 5
8. ANCIENT DESCRIPTIONS, ... 6
9. NATURE OF THE BUILDING, ... 7

CHAPTER II.

The Cemetery of Hawara.

10. EARLY TOMBS, ... 8
11. PTOLEMAIC TOMBS, ... 8
12. TOMB OF T'ET-BAST-AUF-ĀNKH, . . . 8
13. SARCOPHAGUS OF ANKHRUI, ... 9
14. EARLY TOMB CHAPELS, ... 10
15. PTOLEMAIC VILLAGE, ... 10
16. PICTURE FRAME, ... 10
17. ROMAN TOMBS, AND DECORATIVE PAINTING, . 11
18. WORKMEN'S TOOLS, ... 11
19. TABLETS, CASKET, LENSES, &C., . . . 11
20. TOYS, ... 12
21. JARS OF COINS, ... 13

CHAPTER III.

The Decoration and Burial of Mummies.

22. IN PTOLEMAIC COFFINS, ... 14
23. PRESERVATION ABOVE GROUND, . . . 15
24. CONSEQUENT DECORATION WITH GILT HEADS, . 16
25. GILT BUSTS WITH ARMS, ... 16
26. TRANSITION STAGES TO PANEL PAINTINGS, . 17
27. PAINTING ON PANEL, AND METHODS, . . 18
28. PERIODS OF JEWELLERY PAINTED, . . . 19
29. NAMES, AND AGES OF PORTRAITS, . . . 20
30. BURIAL OF PORTRAIT MUMMIES, . . . 20
31. RETURN TO IMMEDIATE BURIAL AND CESSATION OF PORTRAITS, ... 21

CHAPTER IV.

The Inscriptions. By F. Ll. Griffith.

32. SARCOPHAGUS OF ANKHRUI, ... 21
33. CANOPIC JARS, ... 23
34. INSCRIPTIONS ON WOODEN COFFINS, . . 23

CHAPTER V.

The Papyri. By Prof. Sayce.

35. PAPYRI KNOWN OF THE ILIAD, . . . 24
36. CHARACTERISTICS OF THE HAWARA ILIAD, . 24
37. EXTENT OF THIS PAPYRUS, ... 25
38. USE OF ACCENTUAL SYMBOLS, . . . 25

CHAPTER V., *continued.*

PAGE

39. TEXT OF THE PAPYRUS, ... 25
40. EVIDENCE OF THE READINGS, . . . 27
41. FRAGMENTS OF LITERARY PAPYRI, . . 28
42. PTOLEMAIC PAPYRI, ... 29
43. PAPYRI OF TIBERIUS, ... 30
44. PAPYRI OF VESPASIAN, ... 30
45. PAPYRI OF TRAJAN, ... 31
46. PAPYRI OF HADRIAN, ... 32
47. TAX PAPERS, ... 32
48. HOUSEHOLD ACCOUNTS, ... 33
49. RESULTS FROM THE PAPYRI, . . . 35
50. CATALOGUE OF PAPYRI, ... 36
51. THE GREEK INSCRIPTIONS, ... 37

CHAPTER VI.

The Pictures. By Cecil Smith.

52. THE STATEMENTS OF PLINY, ... 37
53. WAX-PAINTING IN GREECE, ... 38
54. OTHER EXAMPLES OF ANCIENT PAINTINGS, . 39
55. ANCIENT USE OF PORTRAITURE, . . . 40
56. DESCRIPTION OF THE HAWARA COLLECTION, . 42

CHAPTER VII.

The Ancient Botany. By Percy E. Newberry.

57. PREVIOUS COLLECTIONS OF ANCIENT PLANTS, . 46
58. STATE OF THE PRESENT COLLECTION, . . 47
59. ANCIENT DISTRIBUTION OF PLANTS, . . 48
60. FOOD PLANTS INTRODUCED, ... 48
61. OTHER ECONOMIC PLANTS, ... 50
62. FLOWERING PLANTS, ... 51
63. NATIVE PLANTS, ... 52
64. MATERIALS FOR MANUFACTURE, . . . 52
65. EXTENT OF VARIATIONS, ... 52
66. LIST OF SPECIES DISCOVERED, . . . 52

CHAPTER VIII.

Biahmu.

67. NATURE OF STRUCTURES, ... 53
68. EVIDENCES FOR THE RESTORATION, . . 54
69. SIZE OF THE COLOSSI, ... 55
70. MEASUREMENTS, ... 55

CHAPTER IX.

Arsinoe.

71. ARRANGEMENT OF THE TEMENOS, . . . 56
72. THE PRO-TEMENOS, ... 57
73. REMAINS OF XIITH DYNASTY, AND LEVELS, . 57
74. LATER REMAINS AND LEVELS, . . . 58

CHAPTER X.

Weights.

75. CATALOGUE OF MEMPHIS WEIGHTS, . . . 59
76. CATALOGUE OF DELTA WEIGHTS, . . . 61
77. CATALOGUE OF DEFENNER WEIGHTS, . . 61
78. AN INDEPENDENT PROOF OF THE CORRECTNESS OF PREVIOUS RESULTS, ... 62

LIST OF PLATES.

Frontispiece. NINE PHOTOGRAPHS OF PORTRAITS.
I. HAWARA SARCOPHAGUS, LID.
II. SARCOPHAGUS, LID AND BODY.
III. SARCOPHAGUS, INSCRIPTIONS.
IV. CANOPIC JARS, INSCRIPTIONS.
V. COFFIN INSCRIPTIONS.
VI. STONE INSCRIPTIONS, HIEROGLYPHIC.
VII. STONE INSCRIPTIONS, GREEK.
VIII. FUNEREAL LABELS, ETC.
IX. HISTORY OF MUMMY DECORATION.
X. NINE PHOTOGRAPHS OF PORTRAITS.
XI. JEWELLERY IN THE PAINTINGS.
XII. PICTURE FRAMES AND BORDERS.
XIII. TOOLS AND USHABTIS.
XIV. POTTERY, XXVITH DYNASTY TO GREEK.
XV. POTTERY, ROMAN.
XVI. POTTERY, LATE ROMAN.
XVII. WAXED TABLETS AND TOMB PAINTINGS.
XVIII. IVORY CASKET, ETC., ONE TOMB.
XIX. TOYS FROM ONE TOMB.
XX. GLASS, TOYS, ETC.
XXI. TOYS, EMBROIDERIES; ONE TOMB.
XXII. WRITING OF DATED PAPYRI.
XXIII. PHOTOGRAPH OF ILIAD PAPYRUS.
XXIV. ACCENTS ON PAPYRUS. COINS.
XXV. PLAN OF HAWARA.
XXVI. RESTORATION OF COLOSSUS; BIAHMU.
XXVII. PIECES OF COLOSSUS; INSCRIPTIONS, ARSINOE.
XXVIII. FLINT AND IRON KNIVES.
XXIX. PLAN OF TEMENOS, ARSINOE.

[Erratum in "A Season in Egypt, 1887," p. 20, ii., line 20, *for* 3240 B.C. *read* 3420 B.C.]

INTRODUCTION.

1. On applying last autumn to M. Grebaut to have some place named for my excavations, he decided on allotting the Fayum province to me; it was not being worked by any one else—the department of antiquities not having touched it for quarter of a century, —and it was a district containing many interesting problems. After copying plans and making notes in England, to make certain of what was already known, I arrived in due course at Medinet el Fayum, and settled on the side of the great mounds, hard by a mill, once more living free in a tent. The place is pleasant enough in the winter; but when the khamasin winds blow, the clouds of dust arise like a thick brown fog. I soon got together some men from the village of Menshiet Abdallah at the end of the mounds; and they went with me afterwards to Hawara.

Medinet el Fayum is the modern town which represents the ancient Arsinoe, so named by Ptolemy Philadelphos in honour of his sister-wife; it lies at the extreme south of the old site, which covers a space of over a mile long and half a mile wide, a vast wilderness of mounds strewn with pottery. At the opposite end of the ruins, toward the north, is the great temple enclosure of the old Egyptian town. Before its name of Arsinoe, the city had obtained the name of Crocodilopolis, from the worship of the sacred crocodiles maintained there; and still earlier it was known as Shed—meaning, apparently, that which is saved, cut out, delivered, or extracted, referring to the district being reclaimed from the great lake. The whole province was known as Ta-she, "the land of the lake;" and, whatever may have been the mistakes of historians about Lake Moiris, there is no doubt that the lake was the main feature of the district.

So many opinions have been broached about Lake Moiris that an account of antiquities in the Fayum without mentioning it would seem impossible. So, although my work has not been in that line, yet it will be as well to state what seems to be the truth about it, in order that some collateral questions should be the better understood. For the following view of the use of the great dyke I am indebted to Colonel Ross, R.E., C.B., who has professionally considered the subject. The Fayum is one of the oases of the Libyan desert, lying close to the Nile valley; and the intervening ground is low enough for the Nile to pour into the basin. The fall from the Nile valley to where the channel widens out into the Fayum is about 12 feet; and the water flows over the province by canals and ravines, worn through the rock and its superincumbent mud, until the streams finally collect in the Birket Kurun at more than 200 feet below the Nile level, and, indeed, 130 feet below the sea. The present area of cultivation is about 20 miles in each direction; but the whole basin, geographically speaking, is about 40 miles across on an average. This does not include the secondary basin of the Wadi Rayan to the south, which never had any connection with the Fayum basin in historic times, the ground rising over 100 feet above Nile level between the two depressions.

In prehistoric times the Nile valley was full of water to a far greater depth than at present, probably 100 or 200 feet deep of water filled it right across. A river of such a size seems almost incredible, and we naturally should suppose it to have been an estuary; but this must not be too hastily assumed, as there are evidences over the whole country of an enormous rainfall, which ploughed up the cliffs with great ravines; while the bare bed of the old Nile in the eastern desert at Silsileh is some miles in width, showing what a large volume of water has filled it; a lesser stream would have cut down a deep channel in the old bed, and would never have filled that and topped the rocks to force its present cut. This prehistoric high Nile is not, however, pre-human, as I found a palæolithic flint high up on the hills to the west of Esneh, clearly river-worn (Pl. xxviii. 1). The geologic conditions, then, in the prehistoric time prove that the Fayum basin must have been a vast lake, connected by a broad arm with the Nile valley. Thick beds of Nile mud exist beneath 10 to 20

feet of deposits washed down from the desert hills; and even this desert detritus is strewn with felspar and quartz pebbles brought in by the Nile from Assuan, and now lying high above the present Nile level. As the rainfall ceased, and the Nile fell, the neck of water was reduced, but it still sufficed as a channel for the filling of the Fayum, in all probability, in the time of the earliest dynasties. The Nile bed has risen, it is true, 4 inches a century by its deposits; and hence at the time of the XIIth dynasty, when it was down to its present volume of water, it probably stood about 14 feet lower than it now does in the Nile valley; but as the drop to the point of flow into the Fayum is at present 12 feet below high Nile, and the water level has risen somewhat there, it is pretty well certain that the Fayum basin continued during the early dynasties to receive the inflow of the Nile as it had done for ages before. This, then, was the state in which the great engineering monarchs of Egypt found the province;—a basin full of overflow Nile water, replenished at each inundation through a marshy shallow inlet, and with much of its bottom so raised by deposits as to have become almost marsh ground, like the present lakes about the coast.

Amenemhat I. is the earliest king of whom we have any evidence in the Fayum. He appears to have reclaimed the site of the capital, Shed, "the separated," or "extracted," and thus he established "the land of the lake." The dyke of Amenemhat I. may perhaps be seen in a fragment of an enormous bank which remains on the north of the temple area at Medinet. It cannot be part of the temenos wall, as it is far too thick in proportion; and no king later than Amenemhat I. would need to place a dam so near to the capital. The great dyke noticed by Linant—if indeed it be ancient, which some have doubted—is probably the further reclamation of Amenemhat III., signalised by his erecting at Biahmu two great statues of himself at the projecting corner of it looking over the lake, and flanking the road on either side. That the water was on the lower and not the upper side of the dyke, as Linant supposed, is proved by the levels. For if the area within the dyke had been covered with water as a reservoir, the Biahmu structures would have been submerged some 12 feet; whereas there is no trace of deposited mud on any of the upper stones, nor is the building such that it is likely to have been placed in a depth of water. The work of Amenemhat III. consisted in reclaiming more land, and damming back the lake to narrower limits, while improving the canals which led in and out of it, so as to render it more effective in co-operating with the Nile. He thus established Lake Moiris, and his works gave him the credit of being its founder in later ages. In the time of Herodotos the lake still seems to have been kept up to its high level, and if this view be correct we ought not to find any pre-Greek remains in the Fayum below Nile level outside of the great dyke: so far as is at present known, this is the case. The circumference mentioned by Herodotos as equal to the coast of Egypt, would have been about 130 miles, against 180 length of the coast-line; so this statement is but little exaggerated. The length in stadia is, however, evidently wrong. Apparently under the Persians or Ptolemies the desire to acquire more land in the Fayum at the expense of the irrigation of the Nile valley, led to restricting the inflow, and gradually drying up the lake. It was reduced greatly during the Greek period, as the temple of Kasr Kerun of Roman age on the shore of the Birket Kurun is 72 feet below Nile level; and Dimeh, a Roman town, is at 69 feet, and has a quay, I am informed, at about 87 feet below the Nile. The shrinkage of the lake, however, went on until it has now left the Roman quay 130 feet high in the air, and the Nile falls over 200 feet before its waters evaporate from the lake. The present problem is how to just let in enough for cultivation without any surplus, and so still further reduce the lake, and increase the area for crops.

The general level of cultivated land in the Fayum has not risen by deposits as in the Nile valley; the denudation by the rapid drainage into the lake just compensating the rise by deposit which would otherwise take place. The evidence for this is seen on the east side of Arsinoe, where the Bahr Tirseh has cut a clean section of the mounds, and the undisturbed bed of Nile mud beneath the ruins is seen to be at just the same level as the fields at present. Also at Biahmu it is certain that the ground has never been much below its present level, or the foundations would have been washed out; nor has it risen much above the level apparently, as the highest mud on the stones is only three feet over the present soil. The fact seems to be that it slowly rose while the lake was at a high level, until it was about two feet higher; and then it has denuded since the lake was reduced, and drainage set in, until it is now perhaps a foot below the ancient level of the XIIth dynasty.

2. The remains at the temple of Arsinoe are now mainly inaccessible, owing to cultivation; and beyond clearing about the pylon, and tracking the sand beds of some foundations, there was no scope for work here. A few burnt houses were cleared out in various parts

of the town, but scarcely anything was found beyond a lot of forgers' coin-moulds of Licinius and Constantine. A fortnight altogether sufficed here, as I was not prepared to buy out the crops and clear the place. I then began to examine the Biahmu buildings, leaving my tent and baggage at Arsinoe, and walking over each day at sunrise, and back at night: Muhammed living at Biahmu to look after the work. We began on the E. structure, which is the most complete, and turned over the whole soil and examined every stone; this occupied four days, and two days more sufficed to dig around the W. pedestal, and turn out many good fragments of that colossus. Strange to say, the nose of the W. colossus must have been lying on the surface, as the second day that I was at work on the E. structure, two boys came from the W. pedestal lugging over the block which they had found loose on the ground. Such is the power of bakhshish in stimulating discovery. A week sufficed to clear up almost every point, and enable a tolerably complete restoration of the monuments to be made.

3. I then moved over to Hawara, and all my men and boys were anxious to go with me; I picked out over sixty of them, and they went altogether with my baggage, and settled as a camp along the canal bank by the pyramid of Hawara. This result was what I had been aiming at in beginning my work at Arsinoe. If I had begun at Hawara, I should have needed to go back to the village of Hawara, two miles distant and across a canal, every night with the men; whereas by their coming from a distance they camped on the spot, and thus there was no loss of time. It is a great advantage also to have the workmen by themselves: they are always ready to begin work; they are regular in coming every day, and can be depended on; they are much less liable to take anything found to their homes, or to bring out things to the work; there is no trouble with shekhs or guards interfering; and, above all, there are no loafers getting in the way and stopping business by coming and talking. I believe it is always the best to draw the workers from a distance, and to have a few of the people of the place in order to keep touch with them; then both parties are afraid of being dismissed, and they know that if they are troublesome they will only drive you into employing the opposite side. At Hawara the first object was the pyramid, and next the labyrinth. I began at once to search the north side of the pyramid more completely than had yet been done, and then to clear on the east side; but both proved fruitless. So then, fearing that the entrance might be on the south side where it is very deeply encumbered, I decided on tunnelling in through the brickwork, to find the central chamber. Find it we did, but the masonry was too massive to be attacked in a hurry, and now it awaits next season's work. Meanwhile the site of the labyrinth was being trenched, and a part of it exhausted by completely turning over all the earth and stones. The result was only to confirm the thoroughness of the destruction which has come over it. The site was used as a quarry during all the Roman period; the great labyrinth, and the casing of the pyramid, were ravaged for stone and lime, both by the Fayumis and by the Herakleopolitans in the Nile valley, as Pliny mentions. Villages of workmen lived on the spot, and carried on the destruction as a livelihood for generations. It is rare now to find even a piece of the pavement remaining, and the plan of the building is lost for ever.

In the first day or two I was going round the neighbourhood, and soon saw a large number of tomb wells sunk in the rock; from these I had great hopes, but they had all been completely plundered in classical times, and the chambers beneath were so ignobly cut in the softest and weakest stratum of rock that it was hopeless to obtain anything, owing to the caving in of the sides and roofs. The water had moreover risen at least four feet since the time of their excavation, and nearly filled many of the chambers; and the fallen stuff had in most cases almost choked up the space. While making a few trial clearings in some brick chambers on the surface, we came on a mummy with a painted portrait bandaged over the face of it (Pl. x. 14), and after two days another (x. 11), and then two days later another (Front. 3); of course more men were put on to this work, and when, after two or three weeks, the labyrinth work was done, all my men (except a few at the pyramid) were turning over this cemetery systematically from one side to the other. After thirteen weeks here the advance of Ramadan made me close work; and as I could not hope to get into the pyramid under some weeks longer, and the cemetery appeared to be practically cleared out, I moved away, and passed my collections at the Bulak Museum, where a dozen of the finest portraits, the great sarcophagus, and some minor objects now remain. What I brought to England was exhibited at the Egyptian Hall, Piccadilly, for five weeks this summer; the place once more appropriately filled, as it has not been since Belzoni's exhibition there over sixty years ago. Some of the visitors of this year remembered and mentioned visiting Belzoni's collections in the same room.

4. The present exploration has been solely a private enterprise, assisted by two friends, Mr Jesse Haworth

and Mr Martyn Kennard, who independently came forward, and bore the larger portion of the costs. Some innocent persons have said, "Surely the English or the Egyptian Government assists such work!" The reply is that the only governmental notice of it is the selection by the Egyptian Government of a large portion of what I find for the Bulak Museum, as a toll for the permission to excavate in Egypt. If only that museum were a safe place, there would be the less hesitation at seeing antiquities placed there; but unhappily the collections have suffered from rain, inundation, and robbery. From Mr Marshall Hewat, the inspector of public works of the Fayum province, I have to acknowledge the greatest kindness and help in my affairs, the mummies and antiquities having been stowed week by week in his office as I gradually despatched them while the work was proceeding. The working out of the materials brought to England could not have been nearly as complete but for the assistance of those friends who have each taken in hand their own specialty, and supplied some of the chapters of this volume. Less noticeable, but quite as valuable, has been the personal help of my friend Mr Spurrell, both in unpacking, arranging, and managing the collections, in ironing the papyri, and also in weighing the weights which I obtained this year. But for Miss Bradbury the large mass of textiles could have had but scant attention; now, however, they have, by her care, been all soaked, cleaned, and ironed, and finally distributed to various collections; the most important and complete set technologically going to a Manchester museum. While Mr Newberry has not only worked out the botanical collection, but has prepared and mounted the specimens, and formed series for different museums. And my friend Mr Webber has taken the excellent orthochromatic photographs of the papyrus and of the portraits, sharp in detail and true in relative shade, which are here reproduced. It is a "sweet mercy," as Cromwell said, to see the proceeds of an excavation so thoroughly taken in hand by those who can best deal with them, and discussed and disposed of at once; and it is not the least part of the pleasures of an excavator to have congenial occupation with so many helpful friends.

CHAPTER I.

THE LABYRINTH.

5. The gap in the desert hills, through which the Nile water flows into the oasis of the Fayum, is signalised by the ruins of two pyramids, one at either end of it. At the point where the stream of the canal turns away from the Nile valley the pyramid of Illahun rises on a rocky knoll, projecting from the desert hills which slope back to the northward of it; and at the edge of the basin of the Fayum, on the most projecting spur of the low flat desert, stands the pyramid of Hawara, with various remains around it; in sight on the one hand of the pyramid of Illahun, and indeed of the cliffs on the east bank of the Nile, and on the other hand looking across the green fields of the Fayum to the cliffs behind the Birket el Kurun.

This site, named from the village of Hawara near by, was the principal ground for my excavations during 1888. I do not propose to state here any of the work which I did at the pyramid, as that is still incomplete, the chamber being found, but not yet entered. The most ancient subject for our attention, then is the site of the labyrinth.

The labyrinth, though usually supposed to be near the entrance to the Fayum, has been by some assigned to the further side of the Birket el Kurun; but the statement of Strabo, who visited the place, is so very explicit and clear that it seems impossible to set it aside. He states that after proceeding about 30 or 40 stadia from the first sailing into the canal he reached the labyrinth; and, again, that Arsinoe was about 100 stadia further on. It is thus evident that the labyrinth lay between the entrance to the Fayum and Arsinoe, or Crocodilopolis, the capital; and Herodotos also states that it was a little above Lake Moiris, and near the city named from the crocodiles. This shows that it cannot have been on the further side of this oasis. By all authors it is described as being close to a pyramid, and the only pyramid anywhere between the mouth of the canal and Arsinoe is that of Hawara. This does not exactly agree to the distance given by Strabo, as it is 55 stadia in place of 40 from the mouth, and only 80 stadia by the canal to Arsinoe in place of 100. Hence Strabo's distances would put the site two or three miles to the east, or nearer the mouth of the canal; but as, after walking several times along the canal between Hawara and Illahun, I could not find any trace of a building or a pyramid except at these two termini, it seems evident that there is no other site but Hawara at which we can look for the labyrinth.

How far, then, will the remains at Hawara agree with the descriptions of the magnitude and importance of the labyrinth? We read of the enormous extent of the buildings, and of their exceeding in vastness all the temples of the Greeks put together, and that they even surpassed the pyramids. Of the beauty

and magnificence of the work we cannot now judge, as almost every stone has long since been broken up and removed; but the extent of the area we can measure, as marked out by the immense bed of chips of fine white limestone which lies on the south of the pyramid. Wherever we dig down we find a bed of flat laid sand, or of beton made of chips of stone rammed down, on which to lay the pavement and walls of some enormous building, and over that lie thousands of tons of fragments of the destroyed walls; on tracing these signs to their limits it is found that they cover an area about 1000 feet long, and 800 feet broad. These mere figures will not signify readily to the mind the vast extent of construction; but when we compare it with the greatest of other Egyptian temples it may be somewhat realised. On that space could be erected the great hall of Karnak, and all the successive temples adjoining it, and the great court and pylons of it; also the temple of Mut, and that of Khonsu, and that of Amenhotep III. at Karnak; also the two great temples of Luxor; and still there would be room for the whole of the Ramesseum. In short, all of the temples on the east of Thebes, and one of the largest on the west bank, might be placed together in the one area of the ruins at Hawara. Here we certainly have a site worthy of the renown which the labyrinth acquired.

6. When Lepsius visited this site he claimed it for the labyrinth, from its position; but the remains which he supposed to be those of the walls and chambers are really of a far later age, being merely the houses and tombs of the population that destroyed the great structure. The large mass of brick buildings which he identified with one side of the labyrinth, are the streets of a village founded upon the thick bed of stone chips which mark the destruction of the masonry; and the stone passage, which he also figures in the plates of the *Denkmäler*, is part of a tomb built in a pit which was cut through the bed of stone chips, after all that part of the labyrinth had been destroyed.

On referring now to the plan of Hawara (Pl. xxv.) the position of the area of the labyrinth will be seen at the south side of the pyramid. The western edge is found just outside of the Roman village, at the limit of the continuous bed of beton (marked "beton 240") which I traced running back for twenty feet or more beneath the houses. The double passage close to this point, on the N.E., is surrounded by a deep mass of fine limestone chips, 10 or 12 feet thick, which overlies the beton bed at that part, and which was cut through when building this tomb in the later times. The character of the masonry of this is exactly like that of those other subterranean built tombs, or passages to tombs, in the cemetery region, the stone of all being very inferior to that shown by the chips of the labyrinth buildings. All these tombs are probably of Roman age. The south limit, or front, of the labyrinth is shown in the section which is cut through the ground by the Arab canal. There, on the west side of the canal, may be seen five blocks remaining *in situ*, resting on a beton bed of white limestone chips. These blocks are merely of a substructure or foundation, as they are of a poor quality of yellow limestone, like the lower stratum of a part of the pavement, though they are superior to that used in the Roman tombs just named. The section shown by the canal cutting is quite clear. On the north of these blocks the ground is composed of an immense mass of limestone chips averaging about 6 feet thick, with here and there some sandstone and red granite, representing the materials of the labyrinth. While on the south of these blocks there is nothing but blown sand and earth banked up against the high debris just mentioned. This difference shows the limit of the building without any question. The numbers marked on several parts of the site are the levels above an arbitrary datum, the zero being a little below the lowest point, the canal level. The levels are in British inches, and only the base-bed levels of the building are marked on the plan, so as to avoid confusion; the other levels of the top of the pavement and blocks are stated further on, when considering the result of the levelling. The extent of the labyrinth to the east is marked by the high mounds of chips which stand there, and the beton bed may be traced on the N.E. by the side of the pyramid.

7. We will next notice what can be recovered of the arrangement of the building itself. The square of mounds surrounding a central space, described by Lepsius, has little or no structural meaning, as those mounds consist of houses of the masons and people employed in the destruction of the labyrinth, the "little town" mentioned by Strabo. This village naturally became established on the outer parts of the site where the buildings had been earliest destroyed, and it did not extend to the inner parts, which were broken up later, as by that time the village would be decreasing. This appears to be the meaning of the square bank of mounds; and we must look rather to the remains of the temple itself. Assuming that it was symmetrical with the pyramid in its main design, and given the axis, and the west edge, we find that the east edge (dotted in plan) would be closely in line with an edge of beton noticed

S.E. of the pyramid. Then the further mounds of chips which extend out on the east of the site, must belong to some outlying or additional buildings. Of the pavement the principal part to be seen is in the eastern half of the site; some years ago this covered a tolerable space, and perhaps some trace of walls might have aided us in recovering the plan. Unhappily, the engineers of the railway found the place, and steadily quarried it for stone, just as the barbarians of the Roman age had done here long before; the last remains of the labyrinth were thus destroyed in our own time, and when an official of the Bulak Museum visited the place, he conveniently reported that this pavement of two different layers of stone was "native rock," so the quarriers had it their own way. Some few blocks of this pavement remain; and also isolated blocks at the two places marked P; while in the side of the canal cutting is another block *in situ*, just in the line of the high bank of chips around the pyramid. The thickness of each of these examples is 25 inches; the double paving is 25 inches yellow limestone, and 15 inches of fine white over that. Of the superstructure there are a few blocks of architraves, of very hard splintery limestone, nodular in structure and liable to solution between the nodules; these are inscribed with titles of Amenemhat III. and Sebekneferu. There are also pieces of a clustered column near these, marked L in plan. Of red granite there are parts of three clustered columns, marked G in plan; these have been drawn and restored by Lepsius in the *Denkmäler*. The only inscription found this year is on a granite column (Pl. xxvii.), which mentions "her monuments to her father for ever," evidently referring to Sebekneferu.

Next, turning to the levels, we see that the level of the sand or beton bed of the building varies a good deal. The front is low (level 145), and probably shows the deeper foundation of a massive wall in front; while, again, there is an equally low bed right across the middle of the whole site, marked S 140, which suggests that there was a great dividing wall across the structure; the drop down to this lower level is very marked at present on the surface of the ground, so much so that I thought that building must remain on the north of it; but on digging there, only clean deep sand was found. South of this line the level seems nearly uniform 240; one place of 217 may be where an extra course of foundation was put in for a wall. North of the cross line the level is rather higher, the bed being at 262 and 255, but it regains the usual level at the west edge, where it is 240. Closer to the pyramid, and on the east of the pyramid, however, it is uniformly lower, averaging about 210, and this therefore probably shows a lower level of pavement altogether. From the edge of the beton bed at the E.N.E., which is very ill defined, as but little material has been added there to the levelled surface of the desert, the ground slopes down to 180, and still lower, toward the east. We may sum up then, so far, by saying that the building was square with additional structures on the east; that it had a great front wall, and a great cross wall along the middle; that the level was uniform, except along the north edge (perhaps outside the building) and at the N.E. outbuildings; that red granite columns were used, but more likely only in the northern part of the site; and built pillars, rather than monolith columns, seem to belong to the part south of the cross wall. This is very meagre information to gain about such a great building, but it is probably about as much as we can ever know; the ground seems to have been exhaustively quarried for stone, and although I turned over a good-sized piece of half an acre or so, examining every chip down to the sand bed, there were only two fragments of inscribed granite as a result. Doubtless some few more fragments might be obtained, but it seems very unlikely that we shall ever recover the plan of the building after the very foundations of it have been removed; especially as it was built upon desert ground, so that there are not even the lines of sand substratum which may be traced in the sites of buildings on Nile soil.

8. We can only, then, turn lastly to the fragmentary and confused descriptions left by those who saw it before it was "marvellously ravaged," as Pliny says. The buildings on the east of the main square may be identified with the *pteron*, or wing, mentioned by Pliny; and perhaps here should be sought the crocodile vaults, or sebekeum, as he says that there are passages beneath this leading to other subterranean chambers; and, furthermore, I found great quantities of crocodiles buried in the chips of the ruins east and south-east of the pyramid, suggesting that this was the quarter for the crocodile burial. As to the main mass of building, Diodoros states that it was square, and had forty pillars on each side, standing within a peribolos wall. On referring to the attempted restoration, at the side of the plan, it will be seen that after subtracting a likely space between the peribolos and the colonnade, the building would require architraves of about 19 feet to unite the row of 40 columns, and this is just about the usual size in large temples, apart from the very exceptional spans over entrances. This form of a colonnade around a

temple was used in the XVIIIth dynasty, by Amenhotep III., for the temple at Assuan, now destroyed. Then, within the labyrinth, Herodotos saw six great peristyle courts side by side, facing north, and six others facing south, and one wall surrounding them all. These rows of courts were face to face, as the doors were "opposite each other." And this was apparently all he saw, so it must have been the part nearest to the entrance, as he was evidently not allowed to go over the whole place. It was also a sufficiently important part of the building to be the main and striking construction, in his eyes. As these were peristyle courts, and therefore of large size, we can hardly err in supposing them to have filled the southern half of the site, up to the great dividing wall which ran across it. The details of these courts are, of course, conjectural; only the usual maximum size for architraves pretty well limits the positions of the pillars around the courts, and an even number at front and back is fixed by the need of entrance; the shrine of each court, and the adjoining chambers, are drawn as in the temple of Ramessu III. adjoining the great hall at Karnak, and this seems to be a likely arrangement within the space. So far this will account for all that Herodotos and Diodoros specify. Strabo, however, gives further particulars of a row of peristyle courts all backing against one wall; long and intricate passages before the entrances to these courts; and a hall of 27 columns, which was a striking part of the building, and apparently was connected with the halls. The number of the peristyle courts, he says, was equal to the former number of the nomes, but this is an indeterminate statement; it is certain that not a dozen peristyle courts of any important size could be put side by side along one single wall within the labyrinth area; therefore the 42 nomes of Egypt, or the 24 nomes of the Fayum, are entirely out of the question. But, remembering the seven chambers of Abydos, and the hypostyle hall before them, we have a clue to the arrangement; the great hall of 27 columns led apparently to the row of nome courts. If we suppose the columns to have been arranged in 9 rows, 3 deep, the maximum length allowable by the architraves would not be enough for the breadth of more than three peristyle courts, and if there were so few they would more likely have been specified. The only other arrangement is by placing the 27 columns in one line along the middle of a hall; and thus, with a quite possible length of architraves, 23 feet, they would serve for a hall along the whole breadth of the building, giving access to the whole row of courts. The number 27 precludes an uneven number of courts, as there could not be a pillar in front of an entrance; and eight courts in the breadth of the building would have been each too small to be suitable when cut up by peristyle columns; hence six courts is the most likely number. That these are not the six courts of Herodotos is indicated by Strabo not mentioning the opposite six courts, and by Herodotos not naming the hall of columns. Also the courts of Herodotos had an open-air space between them, as he describes them as "enclosed by one wall," and not "under one roof;" whereas, Strabo's hall must have been a roofed place before his courts. Very probably the fore part of the labyrinth, with the courts of Herodotos, had been destroyed already in the time of Strabo. The intricate passages and chambers in front of the entrance of the courts would be perhaps equivalent to some such arrangement of buildings as I have indicated behind the great cross wall: such would be quite enough to bewilder any stranger led through them by a guide, for it is astonishing how confusing a large temple appears to any one visiting it for the first time, even when some idea of its arrangement has been obtained beforehand. The statements of Pliny are evidently a compilation of various more or less incongruous facts, which cannot be put together. There seem, according to him, to have been 16 nome courts; but where the 40 statues of Nemesis were placed, and what they really were (unless they were figures on the 40 columns in front), and where the small pyramids could have stood (as there is no trace of them now), are difficulties in the way of making any use of the description. But at least we may see that the 18 courts we have already deduced would accommodate the 16 nomes which are mentioned; and the temples of all the gods, and the statues, may well have found space within the building.

9. It may be naturally objected to such a ground-plan as I have suggested, that it would be unlike the other Egyptian temples, which have a great central shrine with subsidiary chambers around it. But this seems just to have been an essential difference between the labyrinth and all other buildings. No author describes it as having one great shrine, or great temple, within it, nor is it said to be dedicated to any one god pre-eminently; but, on the contrary, continual stress is laid on the equality of a great number of courts, all similar in form, and all intended for the worship of equally important provinces of the country. The descriptions preclude in every respect the existence of a central shrine around which the building was arranged; though it is not

impossible that one of the back row of courts may have led into another chamber or chambers (as at Abydos) at the back of the main building dedicated to Sebek, or to Amenemhat III. who was buried in the pyramid. In any case we must get out of our minds the modern sense of a labyrinth, which certainly had nothing to do with any Egyptian buildings; remembering the warning of Pliny about the labyrinth of Crete, which he says was copied from this, when he remarks that we must not compare it with the meanders of a mosaic pavement, or a maze made in a field, but suppose a building with many doors and galleries, which confuse the visitor. The very absence of a central shrine, and of the usual grouping, would all the more readily bewilder a stranger accustomed to the structure of other and far smaller temples. Each court here is, in fact, a temple in itself, quite comparable in size with the average Egyptian temples.

CHAPTER II.

THE CEMETERY OF HAWARA.

10. We shall here first consider the different regions of the cemetery, and then take in chronological order the various remains found in it; the whole subject of the mummies and their decoration is treated separately in the succeeding chapter, as it is too large to be dealt with in the midst of other matters.

The earliest tombs were probably mastabas of the XIIth dynasty built on the ground north and east of the pyramid; but of these no trace has been discovered, excepting a few fragments of limestone with portions of figures painted in red on a flat surface, as in the tombs at Beni Hasan. A scene in low relief of a priest of Neit, named Pafui, seated, with his eldest son Ra-en-mat, also priest of Neit, leading a calf before him (Pl. vi. 3), was found built into a Ptolemaic brick wall; it is probably of the early time, but might be later, as the name Ra-en-mat (in honour of Amenemhat III.) continued in use till Roman times. (Now in Brit. Mus.) The next period of tombs are some poor interments with terra-cotta ushabtis (Pl. xiii., 26, 27, 28) of rude style, like those of the XXth dynasty which I found at Nebesheh (see *Tanis II.*); these were found deep down in the ground north of the pyramid. Some of the well tombs are probably of about the same date, as in that marked "Tomb well J" on Pl. xxv. I found a bit of an alabaster canopic jar (Pl. vi. 12), and part of a small alabaster dish, of the style of those of about the XXth dynasty at Nebesheh. These tomb wells are found most thickly in the region N.E. of the pyramid, as marked on the plan, but also scattered over the whole area of the cemetery: and although many of them contain late burials of Ptolemaic times, yet the evidences of re-use show that they were first cut at an earlier period. Very often they are lined with brickwork, owing to the shaft having become too crumbling in later times; and one was evidently used as a common burying place, as it contained about a hundred mummies in the chambers beneath, and bits of fine carved funeral furniture left behind in the corners from the older interment. I opened some dozens of these shafts, with considerable labour, and some risk, but only one repaid the work, and that was XXXth dynasty, and not early. Some fragments of tombs, probably of the XXVIth dynasty, are found in the Ptolemaic lining of tomb shafts, as the pieces on Pl. vi. 10 and 11; beside the loose fragment 4.

11. The Ptolemaic graves are mostly to the north of the tomb shafts; they are marked "Pit tombs with box coffins" on Pl. xxv. Some burials of this age also occur in the ground north of the pyramid, at the south end of the ground marked "tomb chambers." This region was the usual place for burials in the early Roman period, when gilt cartonnage busts were used. Papyri of the Ist and IInd cent. A.D. are also usual in the soil here, and for some way north, but not in the north end of the tomb ground. The portrait mummies were mainly found in the southern half of the "tomb chamber" ground, though scattered examples occur down to the region of the pyramid. The northern part of the "tomb chamber" ground is still later, having scarcely any portraits or papyri, but containing graves of the IVth-VIth centuries. Many exceptions occur, burials of the latest time being found among the portraits, and portraits scattered in various parts; while some of the latest burials, with embroideries, occur at the N.E. of the pyramid.

12. To the XXXth dynasty belong some of the finest remains here. The tomb of T'et-bast-auf-ānkh at the N.E. corner of the tomb area, in the region of box coffins, is a noble piece of work; on two sides of the shaft extend the remains of a large stone pavement, on which the tomb-chapel probably stood. The shaft itself is lined with fine limestone, and is wide enough to let a coffin down in either direction; a small *serdab* apparently adjoins it beneath the pavement on the south side; and at a few feet down the

well is a ledge cut in around it, apparently to hold a wooden framing. The shaft is deep, and the passage opens out of the west side. On the south side of the passage are two recesses: one empty; the other contained an open stone coffin, and eight canopic jars, which latter I removed. The passage then opens into a great chamber, cut in the hard limestone rock, in which are two stone coffins unopened; these are quite plain, with curved-top lids, a plain band down the middle, and projecting head ends. The heads of all the sarcophagi are to the north. Beside the stone sarcophagi are some wooden coffins and mummies, which now float about, along with some bobbing skulls, in the water which has risen, and fills about two feet of this tomb. Beneath the water is much rotted and sodden wood-work. As there were no inscriptions below, and the only access was by being slung down with some thin old ropes, I did not think it worth the risk of going down. I had one of the mummies brought up, and cut it open. It was bitumenised, and without any amulets or ornaments; excessively hard and tough, so that it was difficult to break into it, even with an Arab fas. The canopic jars were all brought away; they are in perfect condition, with long inscriptions (given in Pl. iv.) and finely carved heads. There are two sets, apparently for two brothers of the same name, T'et-bast-auf-ānkh, who held the same priesthoods; sons of Horuta, by two different wives, Ankh-tet and Nekht-bast-ru. Inside one jar was a terra-cotta lamp of the IInd cent. A.D., showing at what time the tomb had been plundered. A few long earthenware pots were also found, but they might be later than the interments.

[The following year, this tomb was fully worked out, and on other mummies in it a quantity of amulets were found; we also discovered the sarcophagus of Horuta, and a large number of his ushabtis, all built into the solid masonry which filled a recess in the tomb.]

13. Another fine tomb of about the same period seems to have been built on the surface, a little to the east of the tomb shaft J. Beneath a mass of rock chips, thrown out in excavating tombs around it, I found a large sarcophagus of sycamore wood, the body of it turned upside down, and the lid by its side; as it is incredible that it should have been raised from a pit by spoilers, and as it is certain that it has had a body in it, by the pitch which has run from the mummy, it seems evident that it stood in a surface chapel. The ground around and over it was all rubbish soil, and though it was about 9 feet down, it was not originally buried, but had lain on the ground and been covered with waste chips. This sarcophagus was in two equal and similar halves, lid and body: the outside is 92·4 × 32·3 inches, body 12·0 deep, lid 13·5 deep; inside it is 72·0 × 22·6, the body 7·8 and the lid 10·0 deep; hence the ends are 10 inches thick, the sides 5 inches, the bottom 4·2 and the top 3·5 thick: each part weighs about 3 cwt. It is stuccoed all over, and painted in a good style, with inscriptions for a prince of the Fayum, Ankhrui; the outside of the lid and inside of the body are given in Pl. i: the inside of the lid is covered with stars, and two discs, one with the Sebeks over the head, the other with the cynocephalus over the feet (see Pl. ii.): on the head end of the lid, outside, is part of a curious pantheistic figure, shown in Pl. ii.; along the side of the lid is the line of figures in Pl. i.: the other end and side of the lid are almost entirely bared of stucco. Around the body outside were green serpents waving from end to end, now mainly destroyed; on the bottom, outside, is the long inscription in seven columns in Pl. iii.: while around the inside of the lid and of the body are the other inscriptions in Pl. iii. The account of these inscriptions will be found in chap. iv., by Mr Griffith. When found, much of the stucco had been destroyed, and much of it was loose: I therefore copied at once all that remained, and then endeavoured to secure the stucco on the lid by coating it with melted bees-wax, soaked in by a brazier of charcoal over it: this proved so successful that it travelled to the Bulak Museum—where it now is—without any loss or injury on the waxed part. Tracings of all the parts in Pls. i. and ii. were made at Hawara, and they are here photolithographed directly to a reduced scale. Near this massive sarcophagus, and found just before it, were the fragments of a painted round-topped coffin with corner posts, belonging to a priest of Neit named Ankh-f-en-mut (see Pl. v., 9 *a* to *j*). The other wooden sarcophagi, of which the inscriptions are given in Pl. v., 1 to 8, were found in the region of box-coffins; they are carefully made of acacia wood, in narrow strips, dowelled and glued together.

In one tomb well, to the west of the area, was a great quantity of vases, apparently of the XXVIth dynasty, many Bes vases (Pl. xiv. 3) and other forms which recall those of Nebesheh and Defenneh (2 and 5); they seem to have been buried here after the tomb was disused. Some little flasks, mainly found in the box-coffin region, have a curious plaiting of papyrus strips around them (xiv. 14). All of the pottery in Pl. xiv. is considered from its locality or forms to be of the Ptolemaic or somewhat earlier period.

14. On the north-east of the cemetery, out in the desert, was a region of broken ground with a large amount of limestone chips. I looked over it several times, and in the last week at Hawara I excavated here to ascertain the nature of the remains. In every direction the work brought up crocodiles, of all sizes, from monsters 15 feet long, to infants, and even eggs. The apparent number was swelled moreover by quantities of dummies, evidently made for a ceremonial purpose. The imitation crocodile mummies consist of bundles of reeds or grass, with an egg or only a single bone inside; and they seem to have been intended to testify a worshipper's devotion to Sebek by such pious care bestowed on the sacred animal: doubtless their preparation and sale was a priestly trade. The stone chips proved to be the remains of several buildings (see Pl. xxv.), of which the stone-work had been entirely removed and broken up. The fragments showed the walls to have been finely decorated with well-cut inscriptions, of a good style, but uncertain periods; the largest piece found is in Pl. v. 13. The plan of these buildings could be only observed from the brickwork which remains; sometimes the wall was of brick faced with stone, sometimes the brick is a retaining wall of a foundation of stone, but most usually the brick only forms the side of a platform, either filled with earth, or with a brick top, or in some cases solid brick throughout. The most curious points are the large pits adjoining the north sides of these buildings: they are of rather irregular form, with rough rock sides, and filled with blown sand. [I have since found these to be the mouths of sloping passages or wells leading to sepulchres beneath the chapels. Some of these chambers still contain beautifully cut sarcophagi, quite plain, and formed like that of Amenemhat III. From this feature, and from the names found on pieces of the chapels—Amenisenbnebuu, and Perne Fankh—these were of the XIIth dynasty. After plundering, and re-use under the XXVIth dynasty, they were again plundered later.]

15. Of the Ptolemaic age there is a village at the north-west end of the place. This was probably inhabited by those who had some work to do in connection with the cemetery. Many little bags of sawdust are found here; such are said by Wilkinson to be the sawdust of the floors where bodies were embalmed, tied up, and reverently buried in tombs; but from these being found in the village, from there being no stains in the sawdust, and in some cases the bag containing powdered resins, I am inclined to think that these are scent-bags, which were for placing in tombs, or selling to visitors. Probably, the modern custom of going out to the cemetery for a day's picnic, taking out food, and cooking and feeding in the family room by the sepulchre, was followed also in Roman times. The many baskets in the chambers, the heaps of dates, date-stones and peach-stones, the pieces of bread, the corn, and other food found here, all show that feasts were held; and doubtless these were the representatives of an earlier custom of funeral feasts in honour of the deceased, or for renewing the food for the *Ka*. That the tomb chambers, in the floors of which the interments were made in Roman times, were accessible and visited, is shown by the pieces of wooden locks and bolts of the doors which we found. In the chambers are often found incense burners of pottery of various patterns (Pl. xv. 2, 4 to 8), some of them like the so-called "fire altars" of bronze found in Syria. The upper side of these is always blackened by burning, and sometimes incrusted thickly with charred residues. The lamp with a pottery shelter (xv. 15) is curiously like the principle of the mud covers for lamps, which the Egyptians now make and place in cemeteries to protect the flame, and keep off the wind.

16. One of the most remarkable objects found, is the picture frame, Pl. xii., containing a portrait. It is made of wood, painted brown. Each side has two grooves along it, the back one holding the edge of the border to the panel (see section at side), which pieces are halved past one another at the corners. The front groove is cut through in the top side as an open slit, evidently to let a sliding cover pass over the picture; if this had been of wood, it would surely have been kept in, and buried on the picture in order to preserve it; it is therefore more likely to have been of glass, which would allow of the picture being seen when hung up by the cord, and would be very likely to be broken by accident and not replaced. A sheet of clear glass as large as this, and of just the same period, was found by me at Tanis, bearing paintings of the zodiac signs. The joining of the frame is made by cutting mortises through the grooves, and tenons on the upright sides; these were then fixed together by wedges; the end view in each direction is shown on the plate. This frame, with remains of the wax portrait on the panel, was found lying on its edge, with its face turned against a mummy, in a grave at the south-west end of the region of tomb chambers. The cord tied on to it was clearly for the purpose of hanging it up in a room. It is now in the British Museum, the only surviving example of an ancient picture frame.

17. In some of the tomb chambers are built raised tombs of brick and plaster, placed over interments beneath. These are strikingly like the modern tombs in an Egyptian cemetery; having, like them, pilasters, cornices, and niches in the side, painted on the white plaster with rude patterns. Sometimes these tombs stand in the middle of the chamber, like the tomb in a Muhammedan *weli*; but usually they adjoin one wall, as in Pl. xvii. 4. The designs on some of these tombs are worth notice; the idea of the bird and knife in Nos. 1 and 2 is not known; in No. 3, a cup of very thin glass was found lying on its side, in the recess in the front of the tomb, apparently left after making an offering. These tomb chambers were all broken down and filled up with the debris of the walls and roof, and with blown earth and sand, so that the upper parts are quite unknown; usually, only two or three feet of the walls are to be found beneath the present level surface of the ground; the glass cup must have been covered with blown dust, and so gradually buried, being preserved from the falling walls by the niche. In one grave was found a set of paint saucers, piled together at the side of the painter's head, and two pots, probably used for water. These being water-paints, seem to be most likely intended for tomb paintings on the walls. According to Dr. Russell's examination, they consist of (1) *dark red*, oxide of iron with a little sand; a good burnt sienna: (2) *yellow*, ochre, oxide of iron, with hardly any alumina; becomes dark reddish brown on heating: (3) *white*, sulphate of lime, amorphous powder: (4) *pink*, organic colour in a medium of sulphate of lime; probably madder, and can be exactly matched by that: (5) *blue*, glass coloured by copper: (6) *red*, minium, oxide of lead, with apparently some alumina. They were placed one on the other in the following order: pink, yellow, white, blue, dark red, by the head, and the red by the feet. The saucers are in the British Museum, and the owner's skull in the Natural History department.

18. Of workmen's tools several were found scattered about, mostly in the tomb chambers, which were very likely dwelt in by poor persons like the tombs near Cairo at present. In Pl. xxviii. several forms of iron knives are shown; 13 has a riveted tang on the horn haft; 14, marked A, was found with portrait 11; 17 was found with the flesh-hook or toasting-fork, 16, in a tomb of late Roman age; 19 appears to be of the type of the large flint knife 5; 20 is a curious thick short knife, and the signs on it look as if possibly intended for *Ka-en-ma*, the name of Amenemhat III., so often used in late times; 19 and 21 have wooden handles; 18 is one of a pair of bronze knives. On the flint knives, see chap. ix. In Pl. xiii. there are two forms of drills, (1) the twist drill worked by cross strings, like the modern gipsy's drill, and (13) the bow drill with a turned wood stem, ball and socket joint to handle, and iron drill-piece. The mallet (5) is of the usual form. The set of leather-worker's iron needles (6 to 12) were in such perfectly bright condition when found that I hesitated much as to whether they could be ancient; on inquiry, I heard that the form was not that now used, and furthermore the ancient leather wrapped round them, and palm-fibre string in the eyes could hardly have been added to a modern set. Hence there is no doubt now as to their being of Roman age. The wooden peg (12) was probably for sticking in the ground to stretch the leather thongs used in sewing; the set most likely belonged to a maker of shaduf buckets. A hook with palm rope tied on (2) is exactly what is now used in shadufs. The wooden bodkin (3) was probably used for threading some articles together. The peg (4) is of hard wood, sawn out of a polished piece of furniture; I found it between the bricks of the pyramid at Hawara, and it is therefore of the XIIth dynasty; it was used by the builders for a line-peg. An iron box-hook and staple (14) probably come from a box. The wooden lock-bolts (15, 16) were found in the cemetery. The iron in wooden handle (17) is, I am told, the form of modern Egyptian irons for branding cattle. Fig. 18 is a wooden hook-piece, such as is often seen in the suspension of shadufs. Fig. 19 is a block for linking two loops of rope together, turned in one solid piece. Fig. 20 is a thumb-stall of leather. Fig. 23 is the turned wooden head of a mallet. Figs. 24, 25, are brushes of palm fibre, the latter exactly such as is used now for cleaning out mortars. Most of these tools are new to us, I believe; and, although they are only of Roman age, they are of great interest in the history of technical work. Several whipping-tops were found of the form of No. 22. The bird on wheels (21) is very curious; it was intended to be drawn along by a string through the neck (now in Ashmolean Museum, Oxford).

19. Among the miscellaneous objects found in the cemetery we may note the following. By the side of the stair-way leading to the subterranean tombs, marked SW, at the north-east corner of the labyrinth, a globular leaden urn was found; the lid was cemented on, and it contained burnt bones, so it is evidently a Roman crematory urn. With it were two thick dark-green glass vials of the form No. 3, Pl. xx. In one of the graves, about the middle of the tomb chamber

region, a set of five wooden tablets was found, coated with wax, and inscribed with a formula ΑΠΟΛΛΙΝΟ-ΚΡΟΓΙΝΕΤΑΙ repeated seventeen times, or more; the outside of the first and last tablets are blank, the other inscribed sides are given in Pl. xvii., excepting the last, which is illegible (in British Museum). These were under the feet of the mummy; and the beautifully thin glass vial, Pl. xx. 1., was beneath the head, which lay toward the east.

In a tomb chamber near the north end of the region were found the pieces of a wooden casket veneered with ivory. In Pl. xviii. are shown the coloured front panels, done with red and black paste inlaid in the carving; a panel of the sloping top, with a nymph marching along beating a tambourine; a panel of the ends, which have two such on each, the figures being seated back to back; a glass vial, with thread of blue glass around the neck; examples of the pattern of white thread embroidery on purple; an example of the pattern of the knitted crimson wool hair net, and one of the socks of thick knitted brown wool. The age of this tomb may be probably of the IVth cent.; the carvings show signs of being copies of fine original types, but the painted ivory on the front is plainly the design of a much weaker hand.

Of about the same age is the glass vase, Pl. xx. 6, which is covered with wheel-cut patterns. The glass is remarkably white, clear, and free from bubbles, looking like rock-crystal. Part of the foot is broken, but it is here drawn entire from the pieces which remain.

The glass lenses, Pl. xx. 9, 10, are also of fine glass. The thicker one is in perfect condition, as clear and bright as when made. It is slightly yellowish in colour, and has been polished on a pad, rotating on the flat side as well as on the convexity. The colour, and this method of polish, decides against any suggestion of a modern origin for it. The thinner lens is decomposed on the surface to a translucent white coat. The lens which I found at Tanis was rather larger than these, and of a truer figure. Now that we can experiment with a lens in a clear state, it is evident that these were not made for magnifying, but for condensing light as a bull's-eye. The low flames of the ancient oil lamps, which could not give much light without any chimney, were too feeble to see anything clearly that was not close to them. Hence the need of a bull's-eye which should concentrate a strong beam of light to some feet distance; with this lens one can see details of objects 20 feet distant by the light of a single candle held in the hand.

20. A very singular terra-cotta is the sedan chair (Pl. xx. 7) carried between two porters. The chair is evidently in imitation of basket-work, with a Medusa-head ornament behind, windows in the sides, and flap doors in front. Of course, in such a material, the long poles could not be represented, and it was needful to model the porters in one with the chair. The lady inside is seated, with one arm raised; this figure is made separately, and can be taken out.

Other toys were found in the tombs of the Constantine period, buried with the children, after the custom of painting portraits and preserving the bodies had ceased. One set is in Pl. xx. 12 to 22. Fig. 12, blue glazed bead; 13, a white glass bead; 14 to 16, clear glass vials; 17, an opaque light-blue glass; 18, a dark-blue glass vial; 19, bronze disc; 20, basket and lid; 21, a tinned copper mirror, convex, and with a brass foil handle soldered on, fitting in a wooden case with lid, painted red outside; 22, a rag doll, with carved head and real hair, and parts of two or three different garments. There was also a piece of brass-wire Trichinopoly chain, with a hook.

In Pl. xix. is a series of toys all found in one tomb, and, from the style, probably about the latter half of the IIIrd cent. A.D. 1 is a taper-holder of turned and painted wood, with remains of a taper in it, and much wax run over the outside. 2, 8, and 9 are spindles. 3, 4, 6, 10, 11, are glass vials; and 7 is of alabaster. 5 is a toy bedstead made of palm stick; some remains of a doll probably went with this. 12 is a little wooden table, one leg of which is lost. 13 is a well-modelled terra-cotta doll, painted white. These dolls were made by moulding and baking separate limbs, and then fitting the parts together with plaster. 14, 15, wooden boxes, 14 contained an iron spindle-hook. 16, terra-cotta sphinx; 17 to 19, terra-cotta doll's vases; 20, turned wooden box; 21, basket containing pieces of hair net of very fine square mesh; 22, 27, papyrus sandals—only ceremonial, for burial; 23, wooden comb; 24, 26, wooden vases with stoppers; 25, a wooden box painted with birds and flowers in red and black on a yellow ground. The style of this is very Persian; but I have seen clogs of Roman age from the Fayum with similar paintings. The colour was covered with glue, which was scaling off, so I coated the whole with wax, which has entirely preserved it.

Another find of toys is in Pl. xxi. This is dated by a fresh coin of one of the sons of Constantine I., fixing it to about 340 A.D. The coin was in the wooden box with a number of olives. The date thus given to the very debased frog-lamp and the terra-cotta doll is valuable. The latter is evidently later than the doll and sphinx in the lot last described. The other doll here is of rag, with real hair. A wooden comb, and

some fine hair net, and a little bone pin are personal relics. Several pieces of purple stuff with white thread embroidery were on the clothing, and the patterns are here figured. A large quantity of sandals were also with this interment—some of papyrus, some of string, some of leather; and some leather shoes, all of which are here figured. Of about the same age probably is a head of a woman with abundant hair, dressed up and fixed by four hair-pins, two of ivory, one of horn, and one of silver. A large number of stray sandals, pottery dolls, combs, etc., were found; but those described and figured here are of value as giving series of objects which can be approximately dated.

Some unusual varieties of painted pottery of late Roman age were found. A frequent style is Pl. xvi. 2 and 4, with red and black outlines, white ground, and bright green leaves. Another variety, fig. 1, is formed of purple glaze laid on a drab-olive body in patterns which recall those of modern Egypt. The piece, fig. 3, is painted with black and red on brown pottery. All of these seem to be peculiar to the Fayum.

21. The latest class of objects found in the cemetery are the jars of coins buried as funeral offerings. That they were such, and were not hoards buried for safety, is shown by one lot of many hundreds being all cut in pieces to prevent their being used again; while in another case the offering was entirely of blank discs of copper foil without any marks, and without a single actual coin intermixed, which would certainly have been the case if ever such blanks had been used as money. It is striking to find that, as late as the fifth century, or perhaps the sixth, the pagan offerings were continued; but it is in accord with the fact that this cemetery seems to have been essentially pagan, with the prestige of the old religion and of the pyramid attached to it: Christian burials are scarcely ever found there, and it seems as if the adherents of the old faith were the only persons who continued to bury at Hawara, and with their extinction the place fell entirely out of use. Not a fragment of the Arabic period has been found here. I have gone over all the finds, several thousands of coins, and tabulated the results. Most of the pieces were hopelessly illegible from wear, but all those which I could distinguish are here catalogued. For the identification of the Axumite coins I am indebted to Mr Grueber of the British Museum, who has kindly looked over and reported on some selected examples which I showed to him.

The finds are six in all, one of blanks in a jar like No. 9, Pl. xvi., and five of coins. The coins were found in (1) jar 12 (Pl. xvi.) all cut up, the latest noted being of Arcadius, probably buried about 420 A.D.: (2) in jar 10, over 3000 in all, the latest being of Arcadius out of 180 legible ones examined; probably buried about 420 A.D.: (3) a little bag of leather containing 44, the latest of Zeno and an Axumite, buried about 490 A.D.: (4) in jar 13, the latest of Zeno, Vandal imitations, and perhaps Anastasius, Axumite; buried about 490 or 520(?) A.D.: (5) in jar 9, coins of the same range, with one attributed to Justinian (?) by Mr Grueber, perhaps therefore as late as 550 A.D.; but as there is nothing else in the find later than 520 A.D., this attribution without any inscription may be questioned. The interest of the following catalogue is as showing how soon all the abundant coinage of Constantine and his family had been lost to use, very few pieces before 350 A.D. occurring here, and then only stray examples, much as the few Greek coins which appear. Another result seen is the prevalence of Western coins, of the Vandals and others, which show that even the small copper coinage was carried by trade to a great extent. We have here many unpublished varieties of the Vandal coinage, which cannot yet be classified, but which I have drawn on Pl. xxiv. The following are the lists of coins:—

	2	3	4	5
Corinth, Pegasus and trident	...	...	1	
Pyranthos, female hd. to L. Goat ΠΥΡ	...	...	1	
Herod I., 2 cornucopiæ, anchor BACI	...	...	...	1
Tetricus, Hilaritas	...	...	...	1
Constantine, veiled head, VNMR ...	3			
" " " chariot ...	1			
Constantinopolis, wolf and twins SMCON	...	...	...	1
" victory	1			
Urbs Roma, GLORIA EXERCITVS, soldiers	1			
Populi Romani CONSA star	...	...	1	
Constantine II.	4	...	...	1
Constans	3	...	...	2
Constantius II.	12	...	1	2
Valentinian I.	6	...	...	2
Valens	2			
Gratian	2	...	1	
Valentinian II.	25	...	3	19
Theodosius I.	54	...	3	39
Flacilla	1	...	...	1
Flavius Victor	1			
Arcadius	42	1	6	33
Eudoxia (ux. Arcad. as find 2 ends with Honorius; this type is usually given to ux. Theodosius II.)	2			
Honorius	20	...	...	7
Theodosius II. † in wreath	...	...	12	48
(new type) † in dot circle	...	...	...	2
monogram	...	...	1	2
VOT xxxv.	...	...	...	1
others worn	...	...	...	3
Valentinian III.	...	...	...	1?
Marcian, monogram	...	5	15	53
Leo I., Emperor LE	...	2	7	20
Emperor and captive	...	...	3	23
monograms	...	2	8	34
Lion	...	2	6	14
Zeno, monograms	...	...	9	37
VICTORIA	...	1		
Basiliscus, Rev. Aelia and Marcus (?) ...	...	...	...	1
Basileus, Axumite	...	2	1	3
Unclassed Vandal, *see* Pl. xxiv.... ...	...	1	13	11
Illegible	3000	28	375	1002
Totals	3180	44	467	1364

CHAPTER III.

THE DECORATION AND BURIAL OF MUMMIES.

22. The earlier periods of the practice of mummifying are not represented at the Hawara cemetery, so far as we yet know. All the tombs of the pure Egyptian period that were examined, proved to have been plundered in the Greek times — or perhaps earlier,—and were re-used for interments of the Greek and Roman age. Probably the earliest mummies found were those of T'et-bast-auf-ānkh and his family, to whom the sets of canopic jars belonged (Pl. iv.); these may be attributed to about the XXXth dynasty, and the mummies were solidified with melted bitumen. Of about the same date, or the early Ptolemaic, are some figure coffins with carved faces; these are but rude, and painted roughly with ochre, black, blue, red, and white. The bodies in these are not well mummified, and leave hardly anything but bones. They may be of later Ptolemaic age, as they are found in graves and not wells, sometimes deep, and sometimes with demotic papyri: but if so late it is remarkable that there is no earlier series leading up to these.

The first period well represented is that of the Ptolemaic wooden box coffins, containing elaborately bandaged bodies; buried always in a small recess cut in the sandy soil at the side of a pit about 8 or 10 ft. deep. The recess was often not long enough to entirely hold the coffin, in which case the end projected into the well; and it is strange that these wells are always so small that the coffin needed to be let down on end, or nearly so. The earlier class of coffins are made in the ancient round-topped form, with corner posts standing up at the head and foot of the lid, and similar square posts projecting downward from the body to form feet. The head-board of the lid is higher than at the foot, standing a few inches above the rounded lid; while the foot-board is level with the lid. A little cornice runs around the body part, and the feet usually raise the bottom about six inches from the ground. The round top of the lid is formed of a number of narrow strips of wood running from end to end, pegged together at their sides; and often the centre strip bears a funereal inscription (see Pl. v.). In one case, the leg-posts were all inscribed also, for a man named Ankh-f-en-mut (Pl. v.); and the sides had rows of mummified figures in shrines, painted in red, blue, and black: this is now in the Ashmolean Museum, Oxford. Often the outside of the head and foot boards of the coffin bear figures of Isis and Nebhat seated; and in one case the deceased coming with offerings to each of those goddesses. The mummies in these coffins were usually not well preserved, breaking up readily, and resolving into powder and bones; the bandaging was careful, though not very narrow strips, and the head was covered with cartonnage,* plain black or dark blue, all over the head, with gilt face, and sometimes inlaid glass eyes and eyebrows. Sometimes several mummies would be found successively thrust into one coffin; in one case there were six, the lid would not go down over them, and two heads had been broken off by the end board of the lid. This style may be dated probably to the IInd and IIIrd cent. B.C.

The next stage was to reduce the coffins to plain boxes, without foot-posts, but still with a cornice, and the lid made flat. Nearly one half of the box from the feet upward was covered with fixed lid-boards across it; and the part over the body had a moveable flat lid of boards, which was fastened down by pegs when buried. The only inscriptions on these coffins are demotic scrawls on the ends; and there is never any painting. The carpentry is often very fine and careful. This style is occasionally found containing mummies of the preceding style; but usually the mummies are more elaborately bandaged, in a beautifully regular manner; five or six layers of outer strips were used, all of the same width, but so spaced in the successive layers as to give the effect of a sunken rhombic pattern all over (see Pl. ix., fig 4, but without the knobs or buttons at the centre of each rhomb). This style of bandaging lasted for some centuries in the Fayum, and only died out with the practice of mummifying. The cartonnage of the mummy is of four pieces: (1) the head and shoulders, with gilt face, and painted on the top and sides with figures of gods, etc.; (2) a pectoral, usually four-sided and somewhat tapering, painted with wings, Anubis standing over the deceased on a bier, deities seated, etc., or sometimes a pectoral of ægis form; (3, 4) sandals of purely ceremonial nature—flat pieces of cartonnage of foot form placed under the outermost turn of bandage, painted with a pattern copied from the stitching and joining of a real sandal, or, later than that, with a captive on the sole of each, standing bound at elbows and legs. It was in this period that

* Some purists may object to the use of this word for any material not of the pulpy nature of paper (*carton*); but as the pulped material is always covered with stucco, and this stucco imperceptibly varies in thickness up to a massive layer, it is hardly possible to limit cartonnage so as not to include layers of papyrus or of canvas covered with stucco, which is here the material.

the decoration came into the hands of Greek workmen; on some sandals, the captives are clearly not drawn by an Egyptian, and Græco-Roman thunderbolts are also painted on them: also on the inside of a pectoral and head-case occurs the name of the deceased written by a Greek, "Of Didyma daughter of Phakmos" (see Pl. ix., both inscriptions). This falling of the trade into foreign hands accounts all the more for the rapid decay of hieroglyphic inscriptions, which are rarely found with these decorations, and which became mere nonsense in the next period. Wreaths on the heads, pectoral garlands, and staves of flowers bound together, are found in coffins of this age; the flowers are usually red roses or immortelles. In one case I found a dummy mummy; it professed to be of an infant, and had the regulation head-case, pectoral, and sandals: but the embalmers had not taken the trouble to prepare the little one, but had taken an old muddy thigh-bone, to make up the length, with a shin-bone and an old skull, full of mud, picked up in some deserted cemetery, to give the weight and substance requisite for the body. The whole fraud was decently put in a neat wooden coffin, and duly buried. It may have been mere indolence that led to this, or—sad to suggest—such bogus bodies may have been made up in healthy times when work was slack, and kept ready to serve out whenever a press of business came in. The period of this style is probably about the Ist cent. B.C.

23. At this point an immense change of custom took place. Instead of burying the dead so soon as the mummification was complete, as seems to have been usual hitherto, the mummies were kept above ground in chambers accessible and frequented, for years after the death. Herodotos (ii. 86) mentions the mummies being placed upright in repositories, after the most costly mode of embalming; and Diodoros states that they were kept in special chambers and visited; but of this custom we find no sign at Hawara until about the beginning of the Roman occupation, and then at that epoch it became general. The evidence on this point is plain on the mummies themselves, and from the circumstances of their burial. Many of the portraits on the mummies have been deeply indented by blows, before burial; others have been scratched and scraped across; the gilt cartonnage of others has been broken and parts lost; even in some cases a damaged part has been entirely cut away; and in some the inlaid glass eyes were missing when disinterred; again, several had been exposed to rain, and mud was washed down from the roof of the chambers in which they had stood, and lay coated thickly on them, not merely from one sharp storm, but repeatedly dropped on until it had solidified in pendant lumps; while others had been befouled by birds settling on them. The same long period above ground is shown even more plainly by the occasional repairs which the coverings had undergone: a nose has been knocked off a gilt cartonnage face, and replaced with a rough pinch of plaster, and other damages have been made good in an equally rude manner; while one portrait (No. 7) has suffered from the oil soaking through the thick wooden panel, thus discolouring, softening, and lumping the wax of the picture into a mere brown mass,—this injury must have taken some little time, and yet it was entirely done before burial, as an attempt was made to patch the fault by adding some red paint of a totally different colour to any in the original picture. Another remarkable evidence of the period that had elapsed between the decoration of these mummies and their burial, is the difference of their treatment at the two times. While their preparation is most elaborate and costly, their burial is often of the roughest kind. Moreover many members of a family were buried together in a common grave. In one case a dozen mummies with gilt cartonnage heads were found stacked pell-mell in an old tomb well, which was filled up to within eight or ten feet of the surface; they were placed on either end indifferently, and several were put head down in order to find room for their shoulders amid the legs of the others. In another case a partly filled tomb well was also used, and in it were two mummies with gilt bust-pieces, crushed in, several mummies without decorations, two pieces of cartonnage busts, and two full-size gilt cartonnage figures which had been laid loosely over mummies. Of the portrait mummies found I have recorded no less than sixteen as being found with other portraits, or with plain mummies, in one grave; and this was so commonly the case that there were many other occasions on which it was not noted. Among these one portrait mummy (No. 9, Front.) was lying in a grave too narrow for it, and was therefore placed on edge; the foot-case had been torn off (probably by holding it when letting the body into the grave), and it was shoved into the grave just behind the feet. More instances of rough treatment could be repeated continually, but these examples will suffice to show that the original care which prompted the elaborate preservation and ornamenting of the mummy had entirely disappeared; and the only thought at the time of burial was how to get it out of the way as cheaply and quickly as possible.

24. The object of decoration, then, being not piety to the dead, but pleasure to the living, a great stimulus was given to more artistic productions; and the adoption of the trade by Greek workmen at about this period naturally forwarded a departure from the purely Egyptian types. The style of decoration on the mummies preserved above ground, and afterward buried in the open earth, became first modified by abolishing the pectoral, which was hidden in the bandages, and enlarging the head-piece so that it is more fitly called a bust-piece (see Pl. ix., fig. 1). The sandals, or ceremonial substitutes for them, were far more changed. A rectangular case of cartonnage covered over the whole feet of the mummy, and was so hidden by the bandaging around its edge, that it appears as if it were only a portion of a whole mummy-case of cartonnage, the rest of which is hidden by the swathings. On the top of it are feet in relief, usually gilded, and appearing to stand on a plinth decorated with chequer patterns, rosettes, sphinxes, jackals, etc.; while at the bottom are the outlines of the two feet with captives on them, as on the soles of the earlier sandals. In later types there are merely captives in two rectangles, or even four captives kneeling, representing the four races of mankind recognised by the Egyptians; indeed, nearly always the two captives are painted different colours, one a pink European, the other a yellow Asiatic. These foot-cases are most gaudy and brilliant in their colouring, red, orange, yellow, green, blue, gilding, black, and white, being nearly always used; and sometimes rarer shades of purple, Indian red, olive, etc. The earlier style of these mummies, such as is shown in Pl. ix., fig. 1, with only a purely formal face, may be dated to the later part of the 1st cent. B.C. and beginning of the 1st cent. A.D., judging by what came before and after it.

But a distinct attempt at portraiture next arose: the face is made in a more solid manner, modelled in a mass, and not merely embossed in the stuccoed canvas. The features are individual in their expression; and the different members of a family all modelled by the same workmen, will be varied and distinct in their characteristics. Sometimes a slight beard is shown on the faces of the men, purely naturalistic, and not following any convention either Egyptian or Greek. Further, the names and ages of the persons are often stated on the heads. On one family were the names on the fillet across the front, ΙCΙΩΝ LΛΒ (Ision, aged 32), ΜΑΡ€ΙC LΚΑ (Mareis, aged 21; see Pl. ix., fig. 2), and, written in ink on the head of another, ΣΥΡΟC ΗΡΑΚΛ€Ι. With these was another, older, small, woman without any name, perhaps the mother of the family. But most valuable of all was the case of a man with the name on the fillet round the back of the head, ΤΙΤΟC ΦΛΑΥΙΟC ΔΗΜΗΤΡΙΟC; this can hardly be aught but an error for Titus Flavius Demetrios, and if he were born therefore about 80 A.D., the early ages on these mummies would point to our dating this example to about 110 A.D. This just accords with what we might suppose from other evidences, and serves as a valuable datum to give more precision to the ages of the series of styles. As will be seen in the bust-piece of Mareis, the whole surface is covered with paintings of offerings to gods and sacred animals, ba-birds, deities, etc.; the face is brilliantly gilt and burnished, and the inscription incised in the stucco and gilt. The whole is a solid and heavy piece of work, which will bear a good deal of pressure. Another style of mummy, which is contemporary with these, is plainly bandaged, with peculiar coarse tape outside all, of Indian red colour; and the face is padded out to a very strange wedge form, having a straight vertical edge from top to bottom. These are of the age of the last, and of the present stage of decoration; a papyrus dated under Tiberius being found in the rubbish just over one. The gilt bust mummies of all stages are usually buried in graves in the open ground about 6 to 8 feet deep, and apparently without any tomb-stone or chamber above them. The use of hieroglyphs had by this time fairly died out; they are occasionally found on the gilt-face busts before the portraiture stage, but nearly always blundered; and the only examples on the portrait busts are mere scrawls bearing a slight resemblance to one or two usual groups, but used without the slightest sense. The period of portrait cartonnage may probably be dated from about 50 to 120 A.D.

25. A still further development of portrait cartonnage took place. The bust-piece having been more and more exposed in the bandaging so as to show the decoration, at last arms were added to it, and all the scenes of offerings finally died out (see Pl. ix., fig. 3). The arms are always placed in the same attitude, the right grasping a wreath, nearly always of red flowers, and the left below it placed across the chest. Around the neck is usually suspended a little triad of Isis, Nebhat, and Horus; and on the fore-arms are twisted serpent bracelets; armlets on the upper arm, and rings on the fingers and in the ears, are also often represented. The latest examples were encrusted with cut-stones and glass placed in all the modelled jewellery. These busts are usually gilt over the face, and front drapery, and arms, while the

head is painted. Sometimes even the head is gilt also; and, on the other hand, a curiously naturalistic painting sometimes was used, the arms being of flesh colour, and the robe bright green, or purple, or white, the wreath being of natural coloured leaves and flowers. Two of this style were found inscribed; one (ix. 3) ΑΦΡΟΔΙΤΗ ΘΥΓΑΤΗΡ ΔΙΔΑΤΟΟ LK (Aphrodite, daughter of Didas, aged 20), now at South Kensington Museum; and another entirely gilt with the name AMMONAPIN on a band across the top of the head, now at Bulak. The eyes are sometimes painted as in that of Aphrodite, but more usually inlaid, and with copper foil fringes for the eyelashes. The manufacture of these inlaid eyes, which were used in increasing quantities, developed considerably. For the Ptolemaic mummies in box coffins they were made by bending and cutting a piece of opaque white sheet glass to the form, inserting a disc of black glass for the iris, and surrounding it with a neatly curved border of blue glass, always polished on the outer surface; a line of curved blue glass was also inlaid above this for the eyebrow. The gilt busts of more substantial form, about 50 A.D., required more solid work; and the eyes are then cut in white marble, tapering wedge-shape behind, and with a hole drilled in the middle to receive an iris plug of black glass or obsidian. The finest portrait busts demanded higher work, and then the iris was of clear brown glass or stone, with a pupil of black glass inserted, giving a still more lifelike expression, heightened by the corners of the white being touched with red. In one painted cartonnage imitation had gone so far as to fleck the whole white of the eye with red, fading away lighter and lighter from the corners, to suggest the unhappy ophthalmic tendency of the person. One gilt-face mummy was found in a pipe coffin of terra-cotta; and many were buried in graves over those of the crocodiles S.E. of the pyramid, which had been interred in a mass of white stone chips that had resulted from the destruction of fine buildings that originally stood there. The period of bust-cartonnage with arms probably overlaps that of the style without arms, as few men with arms have yet been found: it may therefore be dated about 100 to 130 A.D.

26. A few brief transitional stages now lead directly to the painted portraits. The force of portraiture in modelling had attained the highest point to which such a material and style could be brought; flights into naturalistic colour were evidently not encouraging in their effect, and so an entirely new departure was made by substituting treatment on the flat surface. One mummy of a girl has the usual gilt drapery, but in place of the face a board is inserted with the face painted on it, and the background all gilt. This mummy has modelled jewellery, with stones and cut glass inserted; and the gilt stucco coat extends all over it, and is impressed with deities and scenes: this is now at Bulak. As such an experiment was not pleasing, another was tried. The later bust-cartonnage mummies had sometimes a canvas outer wrapper, painted over with scenes of the deceased offering to the deities, and being presented to them, sometimes in natural colours on a white ground, more usually in gilt figures on a red or pink ground. The artist now continued this style upward; and instead of a modelled bust, substituted a canvas cover, painted with the head and arms of the person in entirely natural colours, maintaining strictly the conventional attitude with the garland of red flowers in the right hand. The example of this is finely painted on a thin *gesso* ground with firm modelling, distinctly Greek taste, and much use of cross-hatching of darker colour to produce shading; it is in the National Gallery. The next, and immediate, stage was to only paint the face and shoulders, omitting the arms; and of this period is a fine head of a woman on canvas, now at Bulak, which was found with three little children in one grave. Two little girls had the gilt bust with arms beautifully modelled, one with small curls all over the head, the other with wavy hair, all gilt: the eyes of the latter were of polished stone, and stones were inlaid in the jewellery; the lower part of this one is in a canvas wrapper painted with scenes in gold on pink, and the other girl has scenes of natural colours on white. The little boy found with them has a similar wrapper to the last, but his face is painted on canvas, like his mother's; he is now in the British Museum. Here, then, we find in one grave the latest gilt busts and the earliest of the portraits on canvas. If we consider at what date this change can have taken place, from the immemorial Egyptian modelling to the Western taste for painting,—and that a full face and not a profile,—we see that it must be some little time after about 110 A.D., as the bust with arms came into fashion later than that probably. We thus are led to about 130 to 140 A.D. for the introduction of painted portraits: and it is just that time at which Greek art was so greatly stimulated by the patronage of Hadrian, and was especially pressed on the Egyptians by his visit to Egypt in 130 A.D. Hence, so far as our information at present goes, we cannot be far wrong in taking the date of Hadrian's visit to Egypt as the date of the introduction of Greek portraiture in

place of the traditional moulded stucco and cartonnage. The portraits in the Louvre dated to the reign of Hadrian show that painting for mummy decoration was certainly practised at that period.

27. Among the earliest portraits on the wooden panels must be reckoned three of a family all found together, and very peculiarly decorated. In place of any bandages, externally, they are coated with stucco, which is peculiarly tough and hard; this is coloured red, and brightly glazed with some gum or resin; figures of deities and scenes of the deceased and Anubis are modelled in low relief in the red stucco, and are gilt by gold leaf cut out and applied. An oval space is left over the face, and set in that opening is a wooden panel bearing a portrait; around the opening is a row of spots of gold, and at the top of it what would be fairly described as a Coptic cross: as, however, the scenes on the bodies sufficiently prove the paganism of the deceased, it is evident that the cross is a mere ornament. The names of the deceased persons are written in letters of gold leaf across the breast. One is ΑΡΤΕΜΙΔΩΡΕ · ΕΥΨΥΧΙ (O Artemidoros! be of good courage), and the face is that of an old man, but injured (now in Ancoats Museum, Manchester); the other Artemidoros is similarly inscribed, and being a young man, is probably son of the elder (now in the British Museum). With them was a mummy of a woman, similarly decorated except that the colouring was a bright pink, of dry colour—not glazed or shining, with gilt figures; this was inscribed ΘΕΡ-ΜΟΥΘΑΡΙΝ · ΕΥΨΥΧΕΙ, and the face is somewhat smudged (now in the Bulak Museum). The amount of mythology shown on the covering prevents our fairly dating these later than the middle of the second century; and the figures are closely like the figures and scenes on two other mummies which were entirely covered with gilding on the stucco; one of these had the earliest panel portrait, mentioned above; the other was too frail to travel, and was therefore reburied.

The greater part of the portraits were found bandaged on mummies in the manner of style No. 4, Pl. ix., and we will now note the details of this system of portrait-painting, apart from the more artistic study of the pictures which Mr Cecil Smith will deal with in chap. vi. Some of the earlier examples are apparently painted in *tempera;* with so little binding material in some cases that the colour falls off in thick soft flakes, though usually the colour is very thin and quite firm on the panel. The medium soon adopted, and ever after used, is beeswax. The powdered colours were incorporated with this, and to all appearance the mixture was laid on in a melted state, by means of a brush. No doubt a hard point, such as the brush handle, was used to press out and point the colour here and there, especially in the detail of the hair; but the brush seems to have been the principal tool employed in all the pictures, and often the only tool. Though the details recorded about working in wax, in the colder climate of Italy show it to have been used there in a pasty state, and with artificial heat applied to the picture to fuse the coloured waxes together (encaustic), yet this must not fetter us in our conclusions about work executed in Egypt. After seeing there white beeswax not only softened, but fused on its surface by the ordinary sun of April and May, it is evident that the coloured and darkened wax used in painting might be worked in a flowing state without any artificial means during nearly half the year, by the mere heat of the sun. It is therefore needless to call in the supposition of working in stiff wax, which needed to be afterwards remelted, when we see that the climate renders that mode needless; and, on the contrary, all the evidences of the portraits clearly show a fluid state of the colour when applied, and preclude its having been softened down by subsequent heat. Equally needless is it to suppose a solvent of the wax to have been used, such as turpentine or oils; and the perfect freedom from yellowing in the well-preserved pictures, or, indeed, of any change in the tints beyond superficial decomposition, makes it apparently impossible for any changeable organic material to have been added to the wax. So far as I have examined the portraits, and discussed the methods with various artists whose practical experience is of great value, I see no reason to suppose that any process was needful beyond the following:—The colours in powder were ground in thoroughly with the wax (which may have been bleached by heating it to boiling point, as I have found), and they were then placed out in the sunshine when required, so as to fuse them, or a hot-water bath may have been used in cooler weather. The wooden panel was of cedar usually, sometimes of a pine wood, and about $\frac{1}{16}$th inch thick, or occasionally as much as $\frac{1}{4}$ inch; it was about 9 × 17 inches in size. On this was laid a priming of distemper; then a grounding varied in tint, lead colour for the background and draperies, and flesh-colour for the face; and then the surface-colour was worked on, sometimes in a pasty state, more usually creamy and free-flowing. These details are shown by an unfinished attempt on a panel, which was afterwards turned and re-used; now at South Kensington. The broad surfaces of flesh were often

laid on in thick creamy colour with zigzag strokes of the brush, about $\frac{1}{8}$ inch apart, just joining up and uniting in an almost smooth surface: the draperies were usually laid on freely in very flowing colour, with long strokes of a full brush; especially is this shown in No. 1 (Front.), where the full drop of purple wax at the first touch of the brush thinned out as it went down, until at the end of the long stroke the brush was pressed flat out, and every hair has left its streak of wax on the panel. With the absolute certainty of the brush and the hard point being the principal tools, there really seems no clear instance, even in the jewellery or the thickest impasto, to prove that the palette knife was used; and though I should be loth to deny it, yet the *onus probandi* certainly lies on those who would prove three instruments to have been used instead of two.

That the heat of the sun was quite sufficient to melt the wax of these portraits is shown by the damaged state of some of them. They appear to have been left out in sunshine, and to have become melted, so that a smudge was enough to spread the colour all over the panel. One portrait, No. 8, was absurdly disfigured by some child putting a finger in each eye and smearing out the black wax across some two inches of the face, showing how completely soft the wax had become by some accidental exposure. By careful scraping I removed the dark wax from the light flesh tint below, and the only damage is a very soft expression of the iris. Many of the portraits when found, or soon after, were in a very fragile state; the wax had become brittle and hard by age, and was flaking off the panel, so that the picture could not even be turned on edge in some cases. I then gently rubbed, or rather rolled, off the grains of sand and dust, by small circular movements of the fingers, which did not disturb the film of paint; and then, placing the portrait beneath a wire brasier of red-hot charcoal, I watched a spot of melted new wax placed on it, and so soon as that began to spread I plied the panel with spoonfuls of melted wax until it was all covered. If left too long melted, the old colour began to redissolve and flow; if heated too much, it began to roast; and if tilted too sharply in draining it, the run of fresh wax carried off the surface of the paint. Beyond these cautions there is no difficulty in thus recoating the pictures; and when once done they are waterproof and unchangeable, the new wax soaking the wooden panel more or less, and binding on the old colour beside toughening it. In other cases the surface of the wax was decomposed and whitened; I then brushed it with a stiff brush and spirit to remove the altered film, and remedied the whiteness and dulness which almost obscured the colour, by spreading a thin coat of wax and ether over it, and melting the surface part by part, which completely brought out the freshness of the original state. Neither of these methods was used except where really needful, as it was of course of great importance to show the surface as unaltered as possible.

28. The details of the jewellery shown in the portraits are of great interest. Not only do they enable us to date approximately many styles of earrings and necklaces in our European collections about which nothing is known, but also they serve as a basis of classification for the ages of the pictures themselves. Broadly there are three styles of earring (see Pl. xi.): the ball or disc, the hoop, and the pendant or bar earring. That they were not all contemporary is shown by the ball earring only once occurring with a stone necklace, but otherwise with a gold necklace alone; whereas the hoop earring is usually only accompanied with a stone necklace, and the bar earring frequently has both a stone and a gold necklace with it. These associations point clearly to changes of fashion. Now the ball earring is found on the canvas portrait on No. 8, which is a cross-grain panel and therefore also early, and on some gilt cartonnage busts which immediately precede the portraits. So, approximately, we might date it to 120 to 160 A.D. The hoop earring has no distinct sign of earliness or lateness, and is therefore probably of middle date; roughly speaking perhaps 160 to 200 A.D. While the bar earring is probably the latest type, as it occûrs on one hard and stiff portrait of late style, with very elaborate bandaging, and without a foot-case; also on Dēmōs, whose little boy had a necklace of mounted coins which appears of late taste, and it accompanies overloaded necklaces, and in itself approaches to the Constantinian taste for tails, and tags, and bobs. This style may therefore perhaps range from 200 to 250 A.D.

One feature which is generally, if not always, of early date, is the gilt stucco bordering to the portraits, bearing a vine pattern. Sometimes it is moulded on the panel after the painting, and sometimes made on a canvas basis, and applied as a loose arch of decoration to the surface of the picture. The patterns are shown in Pl. xii.; and it looks like a last trace of the gilt cartonnage decoration lingering about the picture. That it is certainly early is proved by finding it on two mummies which were in pink and gilt wrappers (No. 3, and an old man's portrait at South Kensington); but it also accompanied No. 18, which

from the poverty of its work looks one of the latest portraits.

29. In few cases were any names placed with the mummies. One inscription records the name of a very beautiful lady Dēmōs (see Pl. viii.), whose portrait is now at Bulak, and who died at the early age of twenty-four. This name-band is inscribed in gold letters on a scarlet ground, and it was placed across the chest of the mummy, outside of all the bandages. On one panel is the name written in black, Isarous, No. 6; and near it was found a much-decayed portrait of a man marked Tiapos. A fine portrait of an Egyptian, now at Bulak, bore the name Sarapas written on the breast of the mummy covering. And the thoughtful head, No. 7, had the mummy of Diogenes the musician (see Pl. viii.) buried in the same grave.

With regard to the nationality of these people, a glance at their faces is enough to show that a very small proportion of them were natives. The great majority were the families of Greek merchants and Italian officials, and the names indicate also how great was the foreign element. Didyma, Aphrodite, Titos Flavios Demetrios, Artemidoros, Dēmōs, all betoken Greek parentage; while some other names are distinctly Egyptian in origin, such as Isiōn, Mareis, Ammonarin (*Ari-n-amen* = "Ammonodoros") Isarous (*Isi-ari-s*, "Isis created her"), Tiapos, and Sarapas. Probably Arsinoë was largely, perhaps mainly, occupied by Greeks, "Macedonians" as they are called, and the resulting race was of every shade between pure Greek and pure Egyptian.

Another interesting question is whether these portraits were painted from life, or after death. The precedent of the cartonnage busts, to which these succeeded, would make them more likely to be purely funereal. And when we see that the portraits of children are always proportionate in age to the sizes of their mummies it is impossible to suppose that their portraits were usually painted long before death. On the other hand, the extremely lifelike, individual, speaking expression of the faces has led many to suppose that they could only have been executed from the living person. Altogether it seems most probable that the painters knew all the principal families, frequently painting portraits and other subjects for them to hang in their houses, like the framed portrait in Pl. xii., which had been hung on a wall; and that when a portrait was needed for a mummy, a sketch was made from the body by the painter, and afterwards worked up with a lifelike expression from a previous portrait or from memory. The placid repose and impassive dignity of so many of the faces is thus the more readily accounted for. The large proportion of young persons, most being under thirty, does not indicate that the portraits were painted in youth ready for a later decease, for on the gilt busts the ages given are not advanced, 20, 21, and 32, while Dēmōs was but 24. The truth seems to be that though a person might be anxious to recall the fresh beauty of a son or daughter or bride whose death was mourned, there was not an equal inducement to perpetuate the withered features of an aged relative, and where a stout old lady has been attempted the result is not pleasing.

30. These portrait mummies were usually buried in shallow graves; often dug out in the open ground, or in the masses of rock chips which covered the surface from the excavation of tomb wells; but in the later period, at say the end of the IInd cent. and onward, the graves are very usually made in the floors of tomb chambers of brickwork which bordered the road leading to the pyramid from Arsinoe (see plan Pl. xxv.). The mummification was rarely done with pitch; usually the body is soaked with oils which are still sticky and soft, and the flesh is well preserved but of a dark brown colour; occasionally the flesh is merely dried, and the muscles and skin are loose on the bones, with much dust between. The wrapping is very massive; the arms are usually placed downwards with the hands resting on the front of the thighs, and both arms and legs are swathed round in one mass from head to foot. No rings, ornaments, papyri, or amulets have been found on the mummies examined; but occasionally there is gilding across the fingers and on the pubes. A great quantity of loose thread, cut in lengths of about 6 inches, was used in many cases for padding out the wrappings, and especially around the face, to block up a flat support for the panel picture. As the successive strips of bandage added a cumulative pressure on the edge of the picture, so the padding often yielded, and thus the panel became curved, and frequently split.

The mummies were usually buried in the dust and earth exactly as they had stood in the house, without any special preparation. In some cases a cloth is laid over them, and knotted at the head and feet; sometimes this was waxed cloth, as on the red and gilt cartonnages of the Artemidori. In two cases a resined cloth was applied over the whole, and melted on, perhaps by laying in the sunshine, certainly not by a strong heat: this adhered to the wax portrait, without being melted together, and it required to be

removed by constant wetting with spirit and scraping, No. 16 being the most difficult example to clean.

31. Another great change of custom took place about 250 A.D. The mummies were no longer kept in the house, after embalming, and consequently the inducement to decorate them with portraits ceased. In place of the portraits a new interest attaches to this later age. The clothes of the deceased had no place on a regular bandaged mummy, and would naturally not be preserved if the interment was postponed for many years. But when the body was soon buried the best clothes were used to wrap it in, and with it were often placed various objects, such as toys, caskets, etc. These accompaniments of the body, and its lack of elaborate preparation, show conclusively that it was not kept as the portrait mummies had been, but that burial took place while sentiment was fresh. The date of this change is indicated thus:—the portraits begin about 140 A.D.; three changes of fashion in jewellery succeed that; while the large number of portraits, and of plain interments of the same age, also point to at least a century as the period of their use, or until about 250 A.D. On the other hand, a tomb with embroi- [illegible] (Pl. xvi.) is dated about 340 A.D. by a fresh coin [illegible] of young Constantine; and of distinctly earlier age than that is another tomb (Pl. xix.) with terra-cottas of good work, glass, and many objects which recall the third century, but which could scarcely be set down to the fourth. Yet there was no portrait in this tomb, and it was outside of the region of portrait burial, though nearer to it than are most of the embroidery tombs. This therefore indicates immediate burial to have come into fashion in the latter part of the third century, and so agrees with the approximate date of 250 A.D., which we arrive at by considering the continuance of the pictures and the entire absence of Byzantine feeling in them. Probably the great spread of Christianity had brought immediate burial into common usage again.

The mummies of this period are without preservative oils or resins; the muscles and skin remain dried on the bones, with some amount of dust; and they are very fragile. The embroidered garments in which they are buried are the worn clothes of the person; often patched and darned, and generally soiled and rubbed through. The elaborate and expensive embroideries which we find, were therefore in constant use, not merely intended for state costumes seldom put on. This burial of embroideries probably continued until the cessation of interments at Hawara about the beginning of the VIth century. As late as that time pagan burials continued there, as pots of copper minimi are found as funeral offerings, bearing the monograms of the Gothic kings contemporary with Justinian.

CHAPTER IV.

THE HIEROGLYPHIC INSCRIPTIONS.

By F. Ll. Griffith.

32. The following translations are intended to give the general purport of the inscriptions, apart from the critical examination of special points, which would need comparison with other texts, and more study than can be given to them just at present. The complete texts being here published, those who wish to consider them in detail can do so independently of the present renderings.

Pl. ii. Great sarcophagus of Ankhrui; made of wood, painted over a coat of stucco; now at Bulak. OUTSIDE OF LID. *Top register.* The deceased adoring hawk-serpent, who declares to him, "Beloved for ever, I have set thy son in thy seat for ever; as owner of [illegible] by the decree of the gods thy property for ever; [illegible] be destroyed for . . . . for ever, thy house shall not be [illegible] ever."

Band. "Say the Sesennu, Oh Osirian, prince, Ankhrui, we are giving. . . ."

Second register. The Sesennu, or eight elemental gods, standing.

Band. "Says Osiris of many aspects, Oh Osirian, prince, Ankhrui, hidden art thou in the great place of concealment on the west of the lake, which thou rejoinest morning and evening, living for ever." Referring apparently to the deceased being identified with the Osiris-crocodile daily plunging in the lake.

Third register. The Osiris-crocodile, human-headed, in the lake.

Band. "Says Pet, coffer of the gods, amongst them is established the Osirian, prince, Ankhrui, in living day and night amongst us, living for ever."

Fourth register. Shu supporting Nut (= Pet), the heaven, over whom sails the bark of Ra, morning, noon, and evening; Isis and Nebhat giving forth and receiving the disc.

Band. "Say Sokar, Isis, and Nebhat, we protect thee, Osirian, prince, Ankhrui, as Osiris protects his son, and as Isis; thou art established like them renewing life, day, and night for ever."

Fifth register. The bark of Sokar with the shrine,

placed on its sledge, between Isis and Nebhat. "Says Hennu [the name of the bark], the Osirian, prince, Ankhrui is provided with this body of his. Thy son is established for ever."

Band. "Says the Osirian, prince, Ankhrui, son of this one, Oh! thou who madest my body, receive the libation . . . . sweet which I make to thee; may the gods grant that thou be established in thy seat in the future, as are established the gods on their thrones; may thy posterity exist for ever."

Sixth register. Ankhrui making a libation to his mummified father T'et-bast-auf-ānkh. "Priest of Neit, T'et-bast-auf-ānkh, I pour out to thee, my father, water, that the name of thy son may flourish by it; libations of piety and love." The Western goddess, the bird Bāhet, and the goddess Shīt. "Say the mistress of the west, Bāhet, and Shīt, Oh Osirian, prince, Ankhrui, we give thee protection for ever."

SIDE OF THE LID. "Says Osiris in the midst of Ta-she [the Fayum], and the gods who are in the house of Osiris, Oh Osirian, prince, priest of Neit, of Sebek in Shed [Arsinoe] Har-her-ab-shed lord of the upper crown and horns in the midst of the great palace, lord of the great abode, of Hat-hor lady of Tepuah [Aphroditopolis] Neb-te-pu, in Ta-she, Oh Ankhrui son of T'et-bast-auf-ānkh, born of Sit-p-am, thou enterest as one who follows his master, unopposed; thy body is established in the west, thy son pours libations to thee upon the earth, thy soul lives in heaven day and night, thy son is mighty for thy house upon the earth, his enemies are beneath his feet, living for ever." "Osiris in the temple of Hesep give him all life and health."

INSIDE OF THE LID. *Top register.* The vulture *Nekheb* standing. "Nekheb, lady of the south land [says], Oh Osirian, prince of Ta-she, priest of Neit, Sebek, and Hat-hor, Ankhrui son of T'et-bast-auf-(ānkh), born of Sit-p-am, I protected thee in thy mother's womb in the first moment, and so I am protecting thee for ever. Oh gift of Osiris may thy duration be exalted like Ra everlastingly, may thy possessions and thy body not be removed, secure upon the earth for ever."

Second register. The cow *Shed* standing. "Shed [says], Oh Osirian, priest of Sebek lord of Ta-she in the shrine of Sebek, Horut'a [a second name of Ankhrui] born of Sit-p-am, I have trained thy limbs upon the earth, I have fattened thy body like the gods. Oh millions [frog] I have placed thy son as heir of these things."

Third register. The white hippopotamus standing. "Het'-t [or the white hippopotamus, says], Oh Osirian, priest of the temple of Shed, the great abode, Iimhotep [a third name of Ankhrui] son of Sit-p-am, I have smitten thy foes, I have terrified thy enemies, as I did in the beginning. Sayings of these mothers [the above three goddesses], Oh Osiris priest of Sebek, lord of right, in the great abode, and of his divine cycle, Ankhrui son of T'et-bast-auf-ānkh, born of Sit-p-am, mayst thou be established amongst us as are established the thrones in it [heaven]. Thy posterity is fixed upon the earth for ever."

Pl. iii. *Inside, around the body.* "Says Ra, lord of heaven, Oh Osirian, prince, Ankhrui, come to me. . . ." etc., and similar addresses of Ra, Shu, and Sahu, and replies of Ankhrui. *Right side:* "Says Nut, the great . . . , who bore the gods, Oh Osirian, prince, Ankhrui, thou art born like the gods. . . ." etc. "Says the Osirian, prince, Ankhrui, Oh Nut, I am thy son, thou didst bear me upon the earth, my body from Kher-neter, do not thou separate thyself from me for ever; my son will do for me the rites of the temple." *Left side:* "Says Sati, mistress of the constellations, Oh Osirian, prince, Ankhrui, I have poured out the Nile for thy *ka*, as I did for Ra; I have made thy son to perpetuate thy limbs for ever." And address of Ankhrui to his son.

Around the lid inside. "Says Ra, by day and by night, the lord of heaven, and the moon presiding every night, and Nut the mistress of all the gods, Oh Osirian, prince of Ta-she; overseer of the gate of the great lake; overseer of the cutting of the mouth of the lake; chief prophet; overseer of the prophets; commander of the prophets of Sebek throughout the land; overseer of the cattle; director of the ploughing and the burning (of stubble?); chief commissioner of the land; priest of Neit; prophet of Sebek of Shed Har-her-ab-shed lord of the upper crown and horns in the midst of the great palace, in the great abode; and Hat-hor-lady-of-Tepuah in Ta-she; Oh Ankhrui, of son of T'et-bast-auf-ānkh, of similar dignities, born of Sit-p-am, thou hast come to me, follow me as thou didst to my ka upon the earth, my heart is pleased with it, . . may thy body flourish for ever . . . upon the earth like us for ever and ever."

Bottom, outside. Similar title to the preceding, and "prophet . . . of Sebek the peace of the land (?); and of the image of Sebek lord of the festival; and of Sebek lord of the temple of the great one, beautiful among the born; and of Sebek the horned; and of Horus; and of Tahuti; and of all the wives of the gods! . . . city of Sebek; and of Sebek *her menkh;* and of Sebek the divine fisherman; and of Hat-hor the glorious and sacred; and of Sebek of the first rank; scribe of the sculpture; . . . of Sebek; overseer of the singers of Sebek; overseer of the singers of

Neit in the midst of Ta-she; the *amkhut* of Horus son of Isis of the great lake; the interrer of the bodies of the gods of Ta-she; Ankhrui; his surnames are Horut'a, Horpeta, and Iimhotep, son of T'et-bast-auf-ānkh of the same dignities, born of the lady of the house, the sistrum bearer of Hat-hor (Sit-p-am)." Then follows an address to Osiris of the great lake, Isis, and Nebhat, in which Ankhrui says that he spent his life in learning, and teaching the ignorant, and when questioned about temple rites he explained them, and superintended the temple buildings; thus he went on to his 34th year. His majesty ordered him to lay Sebek to rest in his house, etc. etc.

33. Pl. iv. The canopic jars appear to be for two brothers of the same name, T'et-bast-auf-ānkh, sons of two different mothers, Ankhtet, and Nekht-bast-ru. One set of four jars, marked here, H, T, K, A, are taken as the standard, and the variants from these of the other set, *h*, *t*, *k*, *a*, are given. For the part of the inscription common to all the jars the text of H is given (col. v.), and the variants of all the others from it. Thus to complete the reading of any one jar we must take cols. i., ii., iii., or iv., then col. v. and then cols. vi., vii., viii., or ix. The text is one of the longest and most complete known on such jars, which do not usually bear half as much inscription. The titles of the deceased are "Prophet of Neit, divine father, herseshta of the gods of his cycle (?), prophet of Osiris Athi in the midst of Ta-she, prophet of Isis of the great lake, prophet and nurse of Horus son of Isis, prophet of *metafes* (mother of her father?) in the midst of Ta-she, prophet of Hat-hor of Tepuah, prophet of the gods . . . of Tepuah, T'et-bast-auf-ānkh, son of the prophet of Neit, Horut'a, born of the lady of the house Ankhtet;" on the other set "Nekht-bast-ru." One of these two brothers may have been the father of Ankhrui, whose sarcophagus we have just noticed, as both were evidently very important persons; but the titles are not identical throughout, and Ankhrui's father is said to have had the same dignities as Ankhrui; if this were to be taken strictly we ought to find the titles, "prince, chief prophet of Sebek," etc., on the jars.

34. Pl. v. Funerary inscriptions on the lids of wooden coffins. (1) Prayer to Osiris Atha in the midst of Ta-she, to Sokar, in Ta-she, to Osiris-khent-amenti in the midst of Ta-she, to the great Isis in the midst of Ta-she, for provision for Herpa (or Hersep) son of Iisen.

(2) Prayers to these gods for Pe-n-ast, son of Tutu, born of . . . rbast.

(3) Prayers to these gods for Du-sebek (?) born of Ast.

(4) Prayers to these gods for the governor of the town Pet . . . son of Ra-en-mat.

(5) Prayer to Osiris Atha, . . . in Ta-she, to Osiris-khent-amenti the great god, for provision for Pedu-hor-p-si-en-ast, son of Hortahuti, born of Nefert-hert, and for the Osirian the king Ra-en-mat, son of the sun Amenemhat. [This prayer for the deceased king, added to a private inscription, is apparently a new feature, and it is the more striking as showing for how long a time the reverence for Amenemhat III. was maintained].

(7) May Isis the great divine mother give protection to . . . hotep, son of Horsiast, son of Peduhorsiast.

(9 *a*) Prayer to Anubis on his mount in the divine abode, may he bury him in the beautiful and great west mountain, may he give to him funereal provision in the opening of the year, and the new year, and in the festival Uag, and in the feast of Sokar, and in every feast, to the *ka* of his loving son, the great one of the five (high priest of Hermopolis) Ankh-f-en-mut.

(9 *b–f*) Similar prayers on the corner posts and framing of the coffin, addressed also to Ra-tum of Heliopolis and Ptah-sokar-osiris.

(10) A declaration. Osiris-khent-amenti in Ta-she, gives protection to the Hat-hor Tethamen, daughter of the priest of Neit Pedu-hor-p-si-ast, born of Userbu.

(11) . . . priest of Neit, his loving son, Ra-en-mat. . . . nebt per Hathor-em-khu.

(12) Prayer to Osiris in the midst of Ta-she for provisions for Nekht-ra, son of Pedu-amen, born of Th . . . hotep.

(13–15) Demotic endorsements on the ends of wooden coffins. On 14 and 15 are the carpenter's marks on the framing to show how the pieces were to be put together after the panels had been filled in. These marks are given here in the order around the coffin, those which are intended to be identical being bracketed together.

Pl. xxvii. (1) ". . . king Amenemhat, his majesty found . . . going to ruin upon it. His majesty ordered . . . "

(10) Titles of Amenemhat III. ". . . came his majesty to Ta-she . . . "

(11) . . . (Ra-en-m)at, son of the sun . . . Horus of Shed . . . (pleased the king) more than anything."

(12) "Her monuments to her father for ever," *i.e.* erected by Sebek-nefru.

(13) "Sole friend, overseer of all the buildings of . . . "

CHAPTER V.

THE GREEK PAPYRI.

BY PROF. SAYCE. *

35. It is not often that an explorer is so fortunate as to discover a prize like that which fell to the lot of Mr Flinders Petrie last winter. Under the head of a mummy excavated by him at Hawara he found a large roll of papyrus, which, when unfolded, turned out to contain the greater part of the second book of the Iliad. The roll had belonged to a lady with whom it had been buried in death. The skull of the mummy showed that its possessor had been young and attractive-looking, with features at once small, intellectual, and finely chiselled, and belonging distinctively to the Greek type. Through the generosity of Mr Haworth, both skull and papyrus are now in the Bodleian Library at Oxford, along with a tress of the unknown Hypatia's black hair.

The papyrus is assigned to the fifth century by Mr Maunde Thompson. The text is written in large, beautifully formed capitals, and has been revised and annotated with singular care. It thus takes rank with the Louvre papyrus containing the first 175 lines of the Thirteenth Book of the Iliad, which was found at Elephantinê, though the latter is earlier in date.

The three oldest texts of the Iliad hitherto known are all written on papyrus, and have all alike come from Egypt. Besides the Louvre papyrus, a papyrus containing the larger portion of the Twenty-fourth Book of the Iliad was brought from Elephantinê by Mr Bankes, and, like the papyrus of the Louvre, is assigned to the first century before our era. The third papyrus was discovered by Mr Harris in the crocodile caves at Manfalut. It contains fragments of the Eighteenth Book, but is somewhat carelessly written, and of comparatively late date. Another portion of the same roll was subsequently obtained by the discoverer. All these papyri are furnished with accentual marks and signs of punctuation.

36. This is also the case with the Papyrus Petrie, the symbols being introduced with much the same irregularity as in the three other Egyptian rolls. But in addition to the symbols for the grave, circumflex, and acute accents, for the rough and soft breathings, for the loss of a syllable by elision, and for interpunctuation, it further employs the signs for long and short syllables so well-known to the modern schoolboy (see Pl. xxiv.). Six centuries, moreover, before the date of the famous Venetian Codex, it presents us not only with the *diplê*, the chief use of which seems to have been to call attention to the notes of earlier editions, but also with the *diplê periestigmenê*, which marked variations between the readings of Zênodotos or Kratês and those of Aristarkhos, as well as with the *obelos* of Zênodotos, that time-honoured indication of spuriousness. In three cases (794, 859, and 875) a peculiar form of *obelos* is employed, with curved ends, which seems intended to note the lines rejected by Aristarkhos (see Pl. xxiv.).

But this is not all. Here and there a scholion is added in a cursive hand, giving the reading of Aristarkhos where it differed from that adopted in the text. In some instances other variant readings besides those of Aristarkhos are mentioned; as in 865, where notice is taken of the reading Γυραιη of the Massaliot edition. These scholia, along with the critical marks, render the Papyrus Petrie at once unique and of peculiar value.

The scholia appear to have been added by a later hand, like the two corrections (631 and 724) which occur in the text, as well as the critical and accentual marks. That the latter were added after the text had been written is evident from 768, where the apostrophe is placed over the Γ of *μέγ'* instead of in front of it. On the other hand, the punctuation was the work of the original scribe, and consists of a point which is used to denote a full stop as well as the minor divisions of the sentence. It is usually placed on a line with the head of the letter in front of which it stands, and though it is occasionally on a line with the middle or foot of it, the varying position does not appear to affect its use. Where, however, a colon would naturally occur after a word at the beginning of a line (as in 873) the point is preferably placed in the middle. No point is found after the last line of the book.

The scholia are usually introduced by a sign resembling an *antistigma*, and the *stigmê* recurs frequently after the end of a line (*e.g.* 763, 767, 775, 803, 807, 815, 819, 848, 856, 860, 864). It thus occupies the same position as the scholia. It will be noticed that the *antistigma* seems to have been put to a new use.

The list of diacritical marks, however, is not even yet exhausted. A line is drawn under the letters of a word in a scholion, which differs from the reading of the text. Two dots are written over an *iota* when it is followed by a vowel as well as by a consonant

* I have to express my thanks to Mr Walter Leaf for the assistance he has generously afforded me, not only in respect of the MS. of Homer—a subject on which his authority is second to none—but also in respect of some of the other papyri given in this chapter.

(as in 525), and the same two dots appear over ο in ὄιος (746) and over υ in ὑπερθύμοιο (746) and εὖς (819). The curious ornament which marks the termination of the Second Book should be noticed, as also should the colophon, both of which are drawn in the plate of facsimiles (Pl. xxiv.).

The asterisk, as Mr Leaf remarks, is not found; though we should expect to find it attached to lines 474, 480 and 721. However, it is doubtful whether it would be visible before line 474. Mr Leaf adds: "The διπλῆ καθαρά is prefixed to 481, 659, 689, 701, 722, 727, 730, 741, 742, 785, 801, 807, 809, 827, 830, 838, 839, 856, 858, 863, 872. Of these lines we have no scholion of Aristonikos on 481, 701, 785, 838. 727 and 741 should have the διπλῆ περιεστιγμένη, and instead of 801, 863, 872 the mark should be against 802, 862, 871 respectively. It is omitted (or at least is not visible) against 485, 616, 668 (?), 684, 745 (but 746 has the διπλῆ περιεστιγμένη wrongly), 763, 767, 819, 851."

The words, as might be expected, are not divided from one another, and use is made of the *iota adscript*. This has probably been added in some instances by the second hand, and at the end of line 787 it assumes the form of an acute accent (H').

37. The manuscript originally included the First Book of the Iliad as well as the second. But of this only fragments of two lines (506 and 507) are preserved. On the other hand, a large portion of the Second Book is intact. The following are the lines which are either partly or altogether extant: 1–6; 45–49; 111–115; 155–157; 200–205; 223–228; 245–252; 289–292; 331–337; 345–382; 391–404; 411–422; 433–446; 454–470; 472–486; 488–492; 494–510; 516–531; 538–560; 562–598; 601–621; 624–686; 692–731; 735–753; 755–841; 843–877. Two lines (644 and 842) have been omitted by accident, owing, it would seem, to the fact that they begin in the same way as the preceding lines, and the omissions have been overlooked by the corrector. Two other lines (549 and 558) have been rejected intentionally. The second was ascribed to Solon and is omitted in other MSS., and though no other evidence has been preserved to us that the first was considered spurious, the reference in it to the Erekhtheion might have suggested doubts as to its genuineness. Mr Leaf notes that the numeration of lines in the columns shows that line 206 has also been omitted.

38. Reference has already been made to the corrected errors of spelling in lines 631 and 724; there are further mispellings of νθελ for ἐθελ', in line 247, and of επαινε[σαντες] for ἐπαινήσαντες in line 335, which have escaped the eye of the reviser.*

In its irregular use of the accentual symbols including the apostrophe, the Papyrus Petrie agrees with the other Egyptian papyri of the Iliad. Like them it marks the accent thrown back on the preceding word by an enclitic, as in ὄφρά κε (440). In 797, however, we have ὣς τέ, though here it is possible that the short line after the ε may not be intended for the acute accent. Where the accent falls upon the first syllable of a word which begins with a vowel, the breathing is usually not expressed, the accentual sign alone being considered sufficient. Thus we find τῷι (720), ὁρθην (739), and even ἀρχον (726) (Pl. xxiv.), where the grave accent has been substituted for the soft breathing.† On the other hand the breathing may take the place of the accent, as in ἡρως (708). The mark of a long syllable is at times substituted for the accent or the breathing or both; *e.g.* ᾱρηος (767), ὕδωρ (752), οἵδ' (738). Occasionally, however, both breathing and accent are written together; an interesting case of this occurs in line 752, where we have προΐει (Pl. xxiv.), the rough breathing of the compound verb being expressed, and the paroxyton accent being represented by a curious sign which resembles the letter V. The same sign occurs in combination with the rough breathing in ἵζεν (792). Equally remarkable is the accentuation of ὑπερθύμοιο in line 746, where the circumflex must be due to an error, as well as the accentuation of πάνελληνας in line 530. It should be noticed that where the circumflex stands above a diphthong, it is usually placed between the two vowels, as in ἑν (718). The examples of Οἰτυλο[ν] (585) (Pl. xxiv.) and Α'λεισιον (617) show the position occupied by the acute accent at the commencement of a word; though in the second example it is misplaced. Compare [Κλ]εὼνᾱς in line 570.

As regards spelling we have the usual "itacism" in Α'λεισιον, Φθειην (683), and even [η]νοίπαπε (245), and in line 752 we find καλλίροον for καλλίῤῥοον. The double dot over words like ελκεϊ (723) and ὄιος (745) indicates that the vowels above which it stands are to be pronounced separately. This is also the usage in inscriptions of the IInd and IIIrd cent. A.D. at Hawara.

39. Considerations of space make it less desirable to give a continuous copy, as this would be so closely

* Mr Leaf remarks, however, that *επαινε . . .* need not have been an error, since *ἐπαινέσαντες* may have been read purposely.

† Mr Leaf observes that the Harris Papyrus regularly marks the accent on the penult instead of on the following syllable, as in ἐλθων. Consequently ἀρχον is evidently according to rule, like κλεὼνας (570).

equivalent to the received text; and the differences will be more readily seen when separately stated, than if sought for by the reader's own collation. I shall therefore give the readings of the papyrus whenever La Roche's edition states that there is a variant reading of any kind, together with all cases of the use of accents and diacritical marks. It must be remembered that where a portion only of a line is preserved, a disputed reading may exist in that part of it which has been lost, and if I omit to notice it, the omission will be due to this fact. Words will be accented only where they are so in the text. Many of the scholia are much faded and consequently difficult to decipher; only one of them, however,—that on line 671,—has baffled me. Here some of the letters have entirely disappeared.*

3. ὡς Ἀχιλῆα (with one λ). 45. ἀρ, not ἄρα. 111–115. Not omitted (as by Zēnodotos). 156. Not the reading of Zēnodotos. 168, 206. Omission of these lines inferred from the numeration of the lines. 223. [ε]ν θυμ[ῳ]. 226. [γυ]ναικες (against Zēnodotos). 227. Not omitted (as by Zēnodotos). 245. [η]νοίπαπι with uncorrected itacism. 247. υθλ for ἴθλ' with uncorrected spelling. 291, 292. Not omitted. 335. επαιν[ε]σαντες] with uncorrected spelling. 349. ειτ[ε]. 375. [Κρονι]δης Ζευς αλγ[ε']. 395. [α]κτὴ'εφ with dot for iota adscript. 397. [γενω]νται· On this there is a scholion: ηγουν γενηται with a line drawn under the η. 398. [α]νασταντες. 412. [κελαιν]εφι[ς] (against Zēnodotos). 415. δηίοιο (Pl. xxiv.). 419. επικραινε. 420. αμ[γαρτον] (against Aristarkhos). 433. [τοις α]ρα. 436. Scholion: εγγυαλιζει with a line drawn under the λ. The reading of the text seems to have been ε'γγυαλ'ιξει. 439. δ' ἀθροοι[ι] (Pl. xxiv.). 440. ἴομεν ὄφρά κε. 441. ως εφατ'· 447. Scholion: Αρι]σταρχ[ος] αγραφω[ν] with line under the η. The text seems to have read ἀγήραον. 454. Not omitted. 462. [πο]τῶνται; a scholion is attached to this line and the preceding consisting of two lines. The first is preceded by the following mark ', followed by obliterated letters (? αγαλλομενα); the second runs . . των ιθυ[η]. Instead of θ, however, the second letter of the second word may be α. 464. This line is preceded by the *diplē periestigmenē*. 465. Σκο[παν-δριον]. 474. Apparently no asterisk. 476. ὡς. 480. No asterisk. 477. νομι[ον]. 481. ταῦρος (Pl. xxiv.), αγρομένησιν· This line is preceded by the *diplē*. 482. τῶων ἁ[ρ] with the circumflex over the ο. 483. εκπρεπ[ε'] 484. This line is preceded by the *diplē periestigmenē*. 486. ουδέ τι ἴδμεν. 500. ειχον· ἠδ'. 506. [Ογ]χηστόν θ' ἱερον. 522. Κηφισον δῖον ἐν[αιον]. 523. [πη]γῆις επι Κηφισο[ιο]. 525. ἱστασαν. 528–530. Not omitted. 530. πανελληνας. 540. των αυθ'. 542. [τ]ῶι δ' ἅμ' Ἀβά[ντες]. 543. [ορικτησι]ν μελίηισι. 544. [στη]-θεσσι. 545. ἵπουτο (Pl. xxiv.). 546. οἱ δ' ἁρ'. 548. This line is preceded by the *obelos* which somewhat resembles a *stigmē*. 549. This line is omitted. 550. ἰλάονται. 551. κούροι. 552. των ἀνθ' (with acute accent instead of apostrophe). 553. ἄνηρ; the line is preceded by a *stigmē* placed between the upright and horizontal lines of the first letter, T. 558. This line is omitted. 565. Ευρυαλος. 566. [Μηκιστε]ως. 567. των δ' ηγειτο. 569. ἐ'ιχον. 570. [ΚΛ]εώνας. 571. Αρ[ιω-θυριην]. 572. ὀθ ἁρ Ἀδρησ[τος. 573. [Υ]περησίην. 575. ευρείαν· 580. Not omitted. 581. κη[ωσασαν]. 585. ηδ' Οἰτυλο[ν] (Pl. xxiv.). 588. ἤισι (Pl. xxiv.). 594. Πτε-λεον· και Ἕλος· 597. ευχόμενος, αυταὶ (Pl. xxiv.). 598. κοῦρας. 608. Παρρασ[ιην]. 610. πολίες δ'. 612–614. Not omitted. 612. This line is preceded by the *diplē periestigmenē*. 616. [Υρμι]νες. 617. Ἀλεισιον. 626. [π]ίρην. 631. The first hand has written ητε; a line has been drawn through the τ, and a γ written above it (Pl. xxiv.). Κεφαλληνες (with double λ). 634. This line is preceded by the *diplē periestigmenē*. εχον· ἠδ' οἱ Σάμο[ν]. 635. εχον· ἠδ' αντιπέραι ενέμοντο]. 637. [μλτοπα]ρηοι· 640. Καλυδῶνά. 641, 642. Not omitted. 641. μεγαλήτορες. 644. This line is omitted. 655. ὀι. 657. δουρικλυτος. 658. This line is preceded by the *diplē periestigmenē*. ὀν, [Αστ]υο-χεια, Ἡρακλη[ιη]. 659. This line is preceded by the *diplē*. 660. διοτρεφεων. 661. τράφ' ενι; at the end of the line a point is written at the foot of the final letter. 665. Scholion: ιεντ' βη φευγων (i.e. ἵν τισι). The βῆ φεύγων of Aristarkhos must consequently have been in the text. 670. Not omitted. 671. αγεν, with half-obliterated scholion in two lines: (1) [Αρι]-σταρχ[ος] αγε δια το ε*. . . το (2) συμφωνου. 674 675. The *diplē periestigmenē* is prefixed to these lines, but not to line 673. 675. δέ ο[ι]. 680. των. 681. ν[υ]ν α'υ τους ὀσσοι. 682. ο'ι, ὁι τ Αλόπην (Pl. xxiv.) . . . τρηχειτνεμεοντο. Scholion: Αριταρχ[ος] ιακως τρη χειτνα νεμοντο. 683. φθειην ἠδ'. 684. καλέυντο. 686–694. Not omitted. 689. This line is preceded by a half-obliterated *diplē*. 694. Scholion: Αριταρχ[ος] ανστη. 697. ιδε; this line is preceded by the *diplē periestigmenē*. 699. ἐχειν. 700. δρῦφης (Pl. xxiv.) . . . ελελιπτο. 701. ἄνηρ; this line is preceded by the *diplē*. 702. αποθ[ρ]ώσκοντα, Ἀχαιῶν. 706. μεγα-θύμου. 707. γενεη· ὀδ' ἁρα. Scholion: Αριταρχ[ος] ο δ'αμα προτ'. 708. ἥρως. 709. γὲ μεν. 710. τισσαρα-κοντα. 711. παρα[ι]. 716. ἁρα. 717. [Αλ[ζῶνα τρη-

* The text used for comparison is that of La Roche: *Homeri Ilias*, Leipsig, 1873. Brackets indicate lost letters.

* This is followed by what is probably γ, though it may be τ or even π.

χειαν. 718. των δε Φιλοκτητης [ηρχε]ν τοξων ε῾ν. 719. νεῶν. 720. εμβίβασαν, ἴφι. 721. κρατερ; no asterisk. 722. ὗες; this line is preceded by the *diplê*. 723. ὕδρου, ελκεῖ. 724, 725. Not omitted. Line 724 is preceded by the *diplê periestigmenê*. 724. δε μνησισθαι εμελλον; the first hand wrote εμιλλεν, but a line has been drawn through ε, and ο written above it (Pl. xxiv.). 726. ἀρχον (Pl. xxiv.). 727. This line is preceded by the *diplê*. 728. ὗπ᾽, πτολιπόρθιε 729. κλωμακοισαιν 730. οἱ τ᾽ ἔχον; this line is preceded by the *diplê*. 731. των α῾υθ᾽ ηγεισθην, ζυο παιδε. 735. οι τ. 737. This line is preceded by the *obelos*. 738. σῖδ᾽ Αργεισα[ν]. 739. ὀρθην, Ολοοσσον[α]. 740. των αῦθ᾽; here the circumflex is of angular form. 741. νίος; this line is preceded by a *diplê* and a *stigmê*. 742. τόν ρ᾽; this line is preceded by the *diplê*. 744. Λιθικισσι. 745. ουκ᾽ ὄιος᾽, Λειοντες ὄζος. 746. ὑπερθῦμοιο (Pl. xxiv.), Καινεὺσο᾽; this line is preceded by the *diplê periestigmenê*. 747. αμα τεσσαρακοντα μελαιναι νηες ἔποντο; a dot is placed over the ν of νηες. 749. Αινειῆνες, Περραιβοι. 750. Not omitted. 751. ιργ ενεμοντο with scholion: Αριστ[αρχ]ος] εργα νεμοντο. 752. προ῾ῖ᾽ει καλλίροον ὕδωρ᾽ (Pl. xxiv.). 759. τεσσαρακοντα. 760. ησαν᾽ 761. Ατριδῆσιν. 763. μεν γαρ αριστει ἐσαν. 765. ο῾ἰέτιας᾽, εσσας (Pl. xxiv.). 766. Πηρειης. 767. ἄρηος. 768. μεγ᾽. 769. Αχιλλευς, φερτατος ην with scholion: ηγεμων φερτερος ην. 772. απομνησας. 773. παρα ρηγμῖνι. 774. ἵσκοισιν, ἵεντες. 775. τοξοισίν (with point above the line). 777. ανακτος. 780. ὦκει (Pl. xxiv.) 781. τερπικεράυνω, υπεστονάχ[ιζε]. 782. [Τ]υφωεα. Scholion: [Ἀρί]σταρχ[ος] οὕ[τως] τι[νὲς] χωόμενος ὡς ἀπ᾽ ἄλλ[ης] ἀρχ[ῆς]. 784. στεναχίζετο γα῾ια. 785. This line seems to have been preceded by the *diplê*. 787. ἀλεγεινή᾽ 788. θυρησιν. 790. προσεφη. 791. ισατο δε, υιεῖ. 792. ποδωκειησι, ἵ᾽ζεν (Pl. xxiv.) 793. Αισυήταο γεροντος —. 794. ναῦφιν αφορμηθεῖεν (the second circumflex being of angular form); this line is preceded by the *obelos*, with a short wave at either end. 795. ισαμενη μητιφη. 797. ὣς τε᾽ ποτ᾽ ιμηνης᾽ 798. Mr Leaf notes here the existence of a scholion, possibly Αριστ[αρ]χ[ος] ηδηνεν. The text has ηπενδη. 801. This line is preceded by the *diplê*. 802. δε ρεξαι; this line is preceded by the *diplê*. 804. πολυσπερ᾽ων. 807. ηγνοιησεν᾽; ειφαι; this line is preceded by the *diplê*. 808. δελῦσ᾽, i.e. δε῾ λῦσ᾽, not δ᾽ ἔλυσ᾽. 809. This line is preceded by the *diplê*. 810. δ᾽ ορυμαγδος. 811. πολις αιπε῾ια (the circumflex being represented by three points). 813. Βατειαν. 814. ἄθανατοι, Μυρίνης. 816. κορυθαιόλος. 818. μεμαότες. 819. εὖς. 820. Iota adscript added by second hand to Αγχεισῃ, and struck out in Αφροδιτῃ[ι]. 821. [κ]νημο῾ῖσι. 824. ὑπαι (Pl. xxiv.), νἵατο[ν]. 825. πειναν[τις]. 826. των αὖτ᾽. 827. This line is preceded by the *diplê*. 828. ο῾ἰδ᾽ Αδρηστ᾽εια[ν]. 829. Πιτυειαν. 830. Αδρηστος, Αμφιος; this line is preceded by the *diplê*. 831. δυω[ι] (the iota adscript having been struck out by the second hand), Περκωσιον. 832. οὐδε ὁυς, ἐασκε (Pl. xxiv.). 833. φθισηνορα᾽ τῶ. 834. πειθεσθην. 835. Περκώτην. 837. των αῦθ᾽. 838. This line is preceded by the *diplê*. 839. ἀπο; line is preceded by the *diplê*. 841. Λαρισαν, ναιετάασκον. 842. Line omitted, top of column. 849. Αμυδωνος. 850. οὖ᾽ (Pl. xxiv.), επικίδναται αἴαν᾽ 851. Not omitted. 852. ἐξ Ενίτῶν; it is doubtful whether the aspirate is intentionally or accidentally misplaced here. 853. αμφ᾽ ενεμοντο᾽ 854. δωματ᾽ ἐναιον 855. Αιγιαλον, Ερυθίνους. 856. Αλιζώνων Οδίος; this line is preceded by the *diplê*. 857. τηλόθεν εξ Αλύβης ὄθε[ν α]ργύρου ιστι γενεθλη᾽ 858. This line is preceded by the *diplê*. 859. ερυσατο; this line is preceded by the *obelos* (with the two ends slightly curved). 860. This line is preceded by the *obelos*. 861. κιράϊζε και αλλους᾽; this line is preceded by the *obelos*. 862. αῦ. 863. υσμῖνι; this line is preceded by the *diplê*. 864. Μησόσιν αῦ Μίσθλη τε. 865. Ταλαιμένιο[ς], Γυγαιη with the scholion: ενθ᾽ γυραιη τεκε. 866. γεγαῶτας. 868. Μιλητον. 869. [Μυ]καλησ τ᾽. 870. Νασσης. 871. [Ν]ομιονος. 872. ὃς και χρυσον εχων; this line is preceded by the *diplê*. 875. Αχιλλευς εκόμισε; this line is preceded by the *obelos* (with the two ends slightly curved). 876. ηρχεν; this line is preceded by the *obelos*. 877. δινήεντος (Pl. xxiv.).

40. The value of the newly discovered manuscript of the Iliad will now be clear. The critical marks and scholia, for which our earliest evidence has hitherto been the Marcian codex of Venice, are now placed before us as they were written down in the fifth or sixth century of our era. The frequent occurrence of the *diplê periestigmenê* throws light on the text of Zênodotos, and the *obelos* prefixed to lines 548, 737, and 876 (an error for 874–875) informs us, what we did not know before, that they had been rejected. As the *obelos* with curved ends is twice attached to lines (794 and 875) which we have reason to believe were adjudged spurious by Aristarkhos, we may conclude that the third instance in which it occurs (859) is another example of a line which had been condemned by the famous grammarian of Alexandria. The scholion on line 865 furthermore corrects the reading of Eustathios. The readings of the papyrus itself, where they differ from those of the received text, are not without their interest, since the manuscript has been very carefully prepared, and the irregular use of the diacritical signs in it suggests that it was intended for the purposes of instruction. Hence the omission of

line 549 is noteworthy; so also is an uncorrected reading like Μεσθλη in line 864.

Perhaps, however, the chief importance of the manuscript lies in the very fact that its text varies so little from the received one. Like the Masoretic text of the Old Testament, it bears witness to the continuity of the tradition which had been handed down by the great name of Aristarkhos. The received text of Homer is substantially the same as that which has been handed down to us from Aristarkhos. Unless we can recover the manuscripts which the Alexandrian grammarian himself used it is not likely that we shall find a varying version of the Homeric poems. We must be content with such information as the Scholiasts vouchsafe upon the point, or with the testimony of the *obelos* and the *diplè periestigmenè*. These alone will tell us where the received text differs from that of Zênodotos or from that of the Massaliot and other editions which were once famous in the Greek literary world.

41. But it is not only from the tomb of the nameless predecessor of Tennyson's Princess that Mr Flinders Petrie has rescued the fragments of Greek literature. The floating sand of the desert was found to be full of shreds of papyrus inscribed with Greek characters, which have been carefully preserved, unfolded, and pieced together. They seem to have formed the contents of the office of some public scribe, which have been dispersed and scattered by the wind over the adjoining desert. They consist almost entirely of lists of tax-payers, of private accounts, and of copies of deeds or other legal documents, and extend from the later Ptolemaic age to that which preceded the Arab invasion. Several of the papyri are dated in the reigns of Tiberius, Vespasian, and Antoninus, and are consequently important for dating the forms of handwriting employed in them. The majority of the fragments are written in cursive hands, but a certain number are in capitals.

Amongst these are some fragments (No. 15 in Catalogue), unfortunately few and small, which are inscribed in large capitals, and belong to a literary work. The mention in them of Hyrkania may suggest to some scholar the work to which they belong, and I therefore transcribe them here:—

First fragment.	Second fragment.	Third fragment.	
			Second column.
> ηνε . . .	. . . δη . . .		
>	. . . πωλ . . .	. . . ν	ε . . .
ουτε . . .	. . . νς και(?) . . .	. . . .	ην . . .
δρες . . .	. . . και εμ . . .	. . . .	ρει . . .
τεω . . .	. . . (ε)πιεχε . . .	. . . κα	ἔγω . . .
ηι πο . . .	. . . πασι . . .	. . . ον	πρατ . . .
	. . . (α)υταδια . . .	. . . θε	

Fourth fragment.	Fifth fragment.	Sixth fragment.	Seventh fragment.
. . δι . .	. . νης . .	. . ως οικη . .	. . ν ευθυς . .
. . νμ . .	. . δ αγορ[α] . .	. . μιν τ ο στρα . .	. . ν οιδ[ε] . .
. . ει . .	. . νεντ . .	. . ον : και τ . .	. . Υρκαν[ια] . .
	. . εδωι · κ[αι] . .		. . ωλε· κ[αι] . .
	. . ομε . .		. . [ε]φασαν . .
			. . ν . . σο . .
			. . ω . . νδ . .
			. . μεν . . τα .

On two other fragments are the terminations of two lines in -η and -ην respectively.

Although the lines do not end with the regularity we should expect in a prose work, the fact that one of the lines begins with δρες for ἄνδρες shows that we cannot be dealing with poetry.

The most important of the fragments are two (Nos. 80 and 81) which come from a lost history of Sicily, perhaps that of Timaios. The text is written in very small but finely formed capitals, and the beginnings of the first thirty-four lines of the second column are fairly well preserved. They run as follows:—

1. . . . ν συμπ[αντες] . . .
2. . . . ερξε . . ωτ(?) . . .
3. . . . επι πρ . . .
4. . . . μεν . . .
5. . . . τες απ[ο] . . .
6. λ(?)υ(?)ω επερικες . . ημισυ . . .
7. ητ . . . . . εμ . . .
8. νεωσοικος περι . . . ν . . . [μεσημ]
9. βριαν ωρολογιον . . .
10. θω . . . επιβαλλειν εκας . . .
11. τον ηλι[ο]ν εν δε τη μουν[η] . . .
12. βοητον εστιν αρπ(*sic*)μιας . . .
13. τετει . . . ωθιον μεν ετη(?) . . .
14. αμ . . . τον αρας(?) . . . μηδι . . .
15. φ . . . αρας τας αμ(?)ατι(?) . . .
16. κον . . . ηλογωτιο(*sic*) . . .
17. κατηγαγεντο συμπ[αντες] . . .
18. εως τειχος εν ενη . . .
19. κλειταις τα Διωνι π . . .
20. σευς ερ[γ]ον οι μετ[α] . . .
21. [τα]ραχοντας τα δν . . .
22. πενεχονται τειχ . . .
23. νοτιωι . . χ(?)ελη α(?)αν . . .
24. ουχ αλο . . . μ . . .
25. της Ευρωπης εν . . .
26. Σιχ(*sic*)ελιαν προ ησ . . .
27. χ(*sic*)οντα σταδιου[ς] . . .
28. το συμπαν τειχο[ς] . . .
29. δεκα δεοντων . . .
30. θησεος εργον ηπον(?) . . .
31. . . . μενη . . .

32. . . . [σ]υνωκ . . .
33. . . . μεν . . .
34. . . . να . . .

Of the first column, the ends of six lines can be read, . . . γους, . . . η(?)παι, . . . αδος, . . . μοι, opposite lines 17–20 of the second column, and . . . ναι, . . . τις, opposite lines 24, 25. In the second fragment hardly a single word can be determined with certainty. The text seems to contain a description of the fortifications of Syracuse, and the mention of Diôn shows that it could not have come from the pen of Philistos or Athanis, whose histories were continued by Timaios.

42. Two, at least, of the papyri can be assigned to the Ptolemaic age. One is an official stamp in red ink (No. 13). An inscription in large capitals runs round the inside of a circle, and reads, ΠΤΟΛΕΜΑΙΟΥ ΛΑ =, "The 32nd year of Ptolemy." The rest of the circle is occupied by a curious figure and some more letters, among which X is alone legible. On the back of the papyrus, in characters probably of a later period, are the words: (1) . . . ος Μαρωνος Ομω . . . χα . . . (2) . . . μενον ορκον. They have been subsequently crossed out (Pl. xxii.).

The stamp is extremely interesting as an authentic example of block-printing in the Ptolemaic age. It proves to us how nearly the art of printing was anticipated two thousand years ago. The art, in fact, had already been invented; all that was needed was its extended application.

The other papyrus (No. 196) is a tax-gatherer's list, written in a cursive hand. Here is a copy of it:—

1. . . . υπη[ρε]της Κωφος γιτων Νομογ. Φιλ. S δ
2. . . . Αριπεναυς υπη[ρε]τ[ης] Θεσμοφοριου γιτων Σαβινου Ινιδιστου S δ–κα
3. . . . εσθου ραβδιστ[ης] Ωφιωνος ἱεραμ[ενος] εν ἐργαστ[ηριῳ] S δ–κα
4. ά εν ρυμη Βαλλουσησης του Παρεμβολ[μου] S η
5. [Η]ρακλειδης Ηρακλειδου ραβδιστ[ης] ιερακειου S η
6. ανδριαντ[ος] ά εν τω αλυκω S η
7. . . . Α[μ]φων Λυσιμαχου Μακεδον[ος] εν εργ[αστηριῳ] του S η
8. αλυκου ραβδιστ[ης] S η
9. . . . ων Αρπακ . . ωνος ραβδιστ[ης] Μακεδο[νων] των εν S η
10. εργαστ[ηριῳ] ά μαγειρ[ος] προς τη πυλη S η

In a different hand:—

11. . . . ς Πη . . . αλιου τεκτων γιτων Αρχιου S ιβ–ι[α]
12. . . . ονοις Ακουσ[ιλαου] κοπευς γιτων Προπυλου S ιβ–ι[α]
13. . . . Ασκ[λα]τ[ος] βουκολ[ος] Αντικλης Δαμιτος S δ–κα
14. . . . ος . . . των[ος] πωλιειτης S ιβ–ια
15. . . . Απολλων Ε . . . ητ[ος] φαμ[ιν]ιο[υ] γιτων Θεοκτιστ[ου] S δ–κα
16. . . . συκητ[ης] . . . χητος γιτων Βουβα[σ]τριου S δ–κα
17. . . . παυτης θεμιστ[ης] S δ–κα

The next two lines are obliterated.

20. [Διοσ]κορος υπη[ρε]τ[ης] Με[ρ]ρεως απ[ο] . . . αυτ. γιτονι (*sic*) ηλιου S δ–κα
21. Ιερ[ος] μ[αθοδοτης] ε[γραψεν]

The street of Ballusêsê, or more probably Ballusê, must have been in Arsinoê, where also "the Macedonians" were quartered. Hêrakleidês, the son of Hêrakleidês, it will be observed, was the ῥαβδιστής, or "guardian of the statue of the sacred hawk," the symbol of Horos in the great temple of the capital. His residence was "in the salt-pan;" and he was assessed at 8 silver drachmæ.* Aripenaus "the servant of Thesmophorios, and neighbour of Sabinus Inidistês," was assessed at 4 silver drachmæ, the obol being worth 20 copper drachmæ, whereas in three other cases the obol was reckoned at 10 copper drachmæ. Here the assessment was 12 silver drachmæ at ten copper drachmæ for each obol.

The district or toparkhy to which the papyri belonged was called Mukhis, as appears from the 19th registration of the scribe Pêktês (No. 188*a*), which is as follows:—

1. ιθ̄ Πηκτης
2. κατα λογ[ον] δρα[χμων] πρακτορων αργυρ[ικης]
3. τοπαρχιας Μουχεως
4. απο παχων εως μεσορη βυ . . .
5. απο θωθ̄ εως μεχειρ βυ . . .
6. [α]πο παχως (*sic*) εως επειφι βυ . . .

Here there is a space.

7. Τεττυνεως Κρολλων κωμ[αρχης] . . .
8. παω[φι] και παυνι βυ . . .
9. παυνι βυ ν
10. φαμενωθ̄ . . .
11. φαρμουθι εως παυνι βυ . . .
12. επειφ[ι] βυ του β παχ[ων] . . .
13. απο φαωφι εως μεχ[ειρ] κ^L . . .
14. Α[π]ολλων[ιος απο] πολεως . . .
15. παχων β^L
16. απο θωθ̄ εως . . .

"On account of the drachmæ received by the collectors of taxes in cash in the district of Mukhis,

* The symbol is interpreted by Professor Revillout as denoting a half-drachma, or piece of three obols; but it certainly represents the full drachma on the ostraka, and such, too, must be its meaning in certain of the papyri given further on.

from the month Pakhons to Mesore (on) papyrus * . . ., from Thoth to Mekheir (on) papyrus . . ., from Pakhons to Epeiphi (on) papyrus . . . Tettyneôs Krollôn the sheikh (has collected) for Paophi and Payni on papyrus . . ., for Payni on papyrus 3 obols, for Phamenoth . . ., for Pharmuthi to Payni on papyrus . . ., for Epeiphi on papyrus for the second Pakhons . . .," etc.

43. One of the earliest of the dated documents is a letter, fortunately complete, written in small neatly formed capitals (No. 41). The following is a copy of it :—

1. Κοιντος Σηνας Κοιντου υιος Γαιωι
2. Ιουλιω Ζωσιμω χαιριν απεχω παρα
3. σου τας κατα διαθηκην Ρωμαικην
4. καταλελειμμενας μοι υπο Γαιου Μαι
5. κηνα Γρατου αργυριου Πτολεμαικου
6. δραχμιας δεκα $\overline{\text{ς}}$ $\overline{\text{ι}}$
7. Le Τιβεριου Καισαρος Σεβαστου Επειφι $\overline{\text{ιδ}}$

"Quintus Senas son of Quintus sends greeting to Gaius Julius Zosimus. I have in full from you the 10 drachmæ of Ptolemaic silver coins left by will to me by Gaius Mæcenas Gratus in accordance with the forms of Roman law. The first year of Tiberius Cæsar Augustus, the 14th day of Epeiphi."

This date corresponds to 29th June, 15 A.D. The document is important, not only on account of its reference to the silver coinage of the Ptolemies, but also because of the fact that the will had been made in accordance with Roman rather with Greek or Egyptian law. For examples of the writing of this and other dated documents, see Pl. xxii.

Another papyrus (No. 208), dated in the 11th year of Tiberius, is, unfortunately, much injured, the end of each line being lost. But the mention of a "Jew" in it makes it interesting.

1. [ετ]ους ια Τιβεριου Καισ[αρος] . . .
2. Αρ[σινοιτι]κων χιθ. $\overline{\text{δ}}$ τι . . .
3. Ασκληπιαδης . . .
4. [Αρσινοι]τικου χιθ. α' . . .
5. [Αρσ]ινοιτικου ημισ. α' ρι . . .
6. Αρσινοιτικων χιθ. $\overline{\text{δ}}$ τι . . .
7. Αρο[ινοιτικω]ν χιθ. β' τ . . .
8. . . . ιος . . .
9. $\overline{\text{ιδ}}$ Αρσινοιτ[ικου . . .] α' . . .
10. Αρσινοιτικου βλ(?)ι. α' ανου[βας] . . .
11. Αρσινοιτικων χιθ. β' παρα . . .
12. Αρσ[ινοει]τικου χιθ. α' παρα . .
13. . . . ος Ιουδαιου δια . . .
14. [Ασκλη]πιαδου του απο . . .

* I imagine that βυ must stand for βύβλοι, that is, "roll . . ." with a reference number to the roll which contained the collector's ledger account.

I must leave the contracted words unexplained.

44. Two other papyri, in cursive hands, belong to the reign of Vespasian (Nos. 166 and 238). The second is too much damaged for reproduction. It relates to the sale of 22 acres (ἄρουραι) of land, one of the parties to the transaction being described as belonging to the "Colline tribe," φυλης Κολλινα[ς]. Half of the land was situated in the quarter of the city known as that of "the Asparagus and Millet"—at least, such seems to be the meaning of the Greek compound (αμφοδου Ασπαρακεχρων). The deed is dated in the reign of "the Emperor Cæsar Vespasian Augustus," the actual year being lost, and the registration being derived from Tiberius Claudius (καταλο[γισμ]ου παρα Τιβεριου Κλανδιου).

The ends of the lines in the first papyrus are lost. What is left reads as follows :—

1. . . . σι Τιβερ[ιος] οι . . .
2. το Γισκωι Κρονιδ[ου] χ[αιριν] . . .
3. παρα Αχιλλιδ[ος της Ηρα]
4. κλειδου του Ηρα[κλειδου] . . .
5. των απο Μαγδ[ωλου(?)] . . .
6. πολωμους μεριδ[ος] . . .
7. κυριου του αυ[τοκρατορος] . . .
8. Μαρωνος του Ηρ[ακλειδου] . . .
9. απογραφ[ο]μαι π . . .
10. ας ηγορα[κ]α παρα . . .
11. και ομοιως τριω[βολον] . . .
12. Ηρωνος και Πει . . .
13. Ηρακλειδου του . . .
14. των απο της αμ[φοδου] . . .
15. περι την προκει[μενην] . . .
16. κωμην Μαγδω]λου] . . .
17. κατοικιαν αροτρ[ιαν] . . .
18. ημισυ τριμισ . . .
19. δραχμων δια[κοσιων] . . .
20. Διωσ[κουραν] την Ασαρ[ακου(?)]

In a different hand :—

21. Αχιλλις Ηρακλειδ[ου]
22. του συγγενους Μα[ρωνος του]
23. Ηρακλειδου επιδεδ[ωκε την]
24. προκειμενην απ[ογραφην]
25. Μαρων εγραψα και . . .
26. Μηδυης γραμμ[ατευς] . . .
27. Le αυτοκρατορ[ος] . . .
28. Ουεσπασιανου μ[εχειρ] . . .

It would seem that this was a deed of transfer of an arable farm, for 200 drachmæ or more, from Akhillis the daughter of Hérakleidês of the village of Magdo(l) to her kinsman Maron, in the first year of Vespasian. It will be noticed that the names are Greek, and that Akhillis was holding property in her own right.

Another papyrus (No. 321) is dated in the second year of Titus Flavius, [ετους δευτ]ερου του αυτοκρατορος Τιτου Φλαυιου, but as it has been a good deal injured, and contains little except a list of proper names, it need not be given here in full.

45. The case is different with the "copies" of two deeds, in cursive hands, executed in the 5th and 13th years of Trajan (Nos. 223 and 303). These run :—

1. Αντι[γραφον]
2. Αμμωνιου Παπαητος'
3. Πετοζας αγορανομζου
4. ετους πεμπτου αυτοκρατορος
5. καισαρος Νερουα Τρα[ιανου]
6. σεβαστου Γερμανικου
7. παυνι κγ Ερμης Ισιδωρου
8. Σαβοζνωχαιρατος απο τ[ης]
9. μητροπολεως αναγραφομ[ενος]
10. επ αμφοδου Μαρασζας
11. Περσης της επιγουης
12. και τη τουτο . . .
13. Αμμων ουτι αφ . . .
14. Περσην . . .
15. αυτου αλληλων . . .
16. αις εκτισιν παρα . . .
17. ην και απο Δημ[κου] . . .
18. οπηνικα ε . . α παρ(?) . . .
19. ανευ πασης υπερ . . .
20. και ιρρησιλογι[σμου] . . .
21. αργυριου δραχ[μας]
22. εξηκοντα ϛξ

"Copy made by Ammônios Papaês, son of Petoza the clerk of the market in the 5th year of the Emperor Cæsar Nerva Trajan Augustus Germanicus, the 23rd day of Payni. Hermês the son of Isidôros Saboznôkhairas from the capital (Arsinoê), brought up in the street called Marasza, a Persian by descent, . . . to Ammôn in their mutual dealings by way of payment in full . . . without any over(reaching) and wrangling [has agreed to pay] 60 drachmæ of silver."

1. Αντιγραφον δι εγβολης
2. δια της Σαραπιωνος τρ[απεζης]
3. πλατειας ετους τρισκαιδεκατου
4. αυτοκρατορος καισαρος Νερουα
5. Τραιανου σεβαστου Γερμανικου
6. Δμηκου υιον Μηνα(?) του
7. εναν[ου] Συρικων . . . ου
8. Πτολεμαι[ου] υιο[υ] Πτολεμαιου
9. τας ισας . . . εν αυτωι
10. επι μεν υποθηκη γης
11. Διοκητου αρο[υρης] μιας' ημισους
12. Τωταρης Ηραμπυνιος
13. οκτο . . . αρουρης
14. μιας περι το μερ[ος] Ηροδωρης
15. επωκιον Ηρακλειδου γραφην (sic)
16. της Απικιος τραπεζης
17. αρτ[αβας] τεσσαρακοντα αι
18. επι το αυτο αμοτιθεως
19. υιι πεποιηται (sic) ις αυτου
20. εξα (sic) μαρτυρων αποχρη Ι
21. αρτ[αβας] τριακοσιας τεσσαρακοντα.
αρτ[αβας] δυ[ναιας] . . .

"Copy for publication from Serapion's table called the Broad, in the 13th year of the Emperor Cæsar Nerva Trajan Augustus Germanicus, belonging to Dmêkos the 9th son of Menas(?), Syrians, [and] Ptolemy the son of Ptolemy. They [have entered] into partnership in it (?) on a continuous mortgage of land, one acre and a half of which belongs to Dioktêtos and 8 . . . to Tutarês the son of Herampyôn, one acre [being] around the heritage of Herodôrê which is a farmstead of Hêrakleidês. The document from the office of Apikôs, executed for the son, is sufficient without witnesses [at a cost of] 40 ardebs which [have been given] by common consent for the same purpose. In all [the sum paid is] 340 ardebs. The ardebs amount to two minæ each (?)."

A deed belonging to the 4th year of Trajan comes next in the list among the dated papyri (No. 298). It is written in a very bad cursive hand, and reads :—

1. δL Τραια[ου] του κυριου επειφι ι
2. Πετ(?)ιαου(?) Ιουλ[ιου] Ιουλ[ιου] Μετακυαλιδ. αρ[χοντος] τοῦ . . .
3. θερμουθ[ι] Ασκλη[πιαδος] υ[ιου] Ασκλη[πιαδος] Μετακυαλιδ.
4. Μαρωνος του Μαρωνος γ̄ μερ διοβολ β Κοιαϛ
5. επι το αυτο οβολ η ϛ προς αις επι βιβ[λο]ν οβολ δϛ̄.
6. επι κο. Δικαιο [κ]υνηγου τ[ε]λος της μερ[ιδος] Ιερι(sic)ως
7. Sρ της ἐελ[του] κο Ι S ω ιωι το αλ[λο] Sϙ

"The fourth year of Trajan the lord, the fifth day of Epeiphi, Petiaos (?) Julius son of Julius M. being archon, the . . . day of Thermuthi, Asklêpias son of Asklêpias of M. and Maro the son of Maro have paid

the tax (*μερισμός*) of two obols [each] on the palms:* for the same purpose 8 obols; in addition to the palms, upon papyrus ten copper drachmæ (?); for the palms of Dikaiokynêgos, the duty on the property of the priest 100 drachmæ; for the register of the tax on palms in all 800 drachmæ; added to the rest, 900 drachmæ."

46. I will next take a fragment which is inscribed on both front and back (No. 116). The several deeds which it contains are dated in the reign of Hadrian, and are written in four different hands, three of them being cursive.

I.

2. . . . *Σαπρου του Σαπρου*
3. . . . *πιδος απο αμφοδου*
4. . . . *και Πανωνος Νωνι*
5. . . . *θενωος(?) μητρος Θαν*
6. . . . *νου και Πανομιεως*
7. . . . *Πανομιεως μητρος*
8. . . . [*Ηρακ*]*λειδου Ηρακλειδου εν*
9. . . . *ος Σοηρουτος και Απολλα*[*ς*]
10. . . . *Διοδωρου μητρος Τα*
11. . . . *Αναποκωκης Αρτιβ*
12. . . . *νος μεριδος παυπαν*
13. . . . [*ε*]*ν ετεροις. Προκανων*
14. . . . *Μαξιμου ομοικος Λια*
15. . . . [*αυτοκρατορο*]*ς καισαρος Τιτου Αιλιου*
16. . . . [*Αδρια*]*νου · Σουβανου Σωσεβος . . . .*

II.

1. xx (*sic*)
2. *Σιτολ*[*ογιον*] *Διουσ*[*ιου*] *Ιδο*[*μενεος*] . . .
3. *Σωτας Σαδαλου . . .*
4. *κ*(*ω*)*μης Νειλους . . .*
5. *Ηρακλειδου α . . .*
6. *απο πυλ*[*ης*] *του α . . .*
7. *Αντων*[*εινου*] *καισαρος . . .*
8. *τας επιστολ*[*ας*] *εις . . .*
9. *Θεωνος Σπρ. Θυ . . .*
10. *δια Διουσιου β . . .*
11. *μεριδος τ*[*ης*] *Ερα . . .*
12. *ης εποιης αμ*[*α*] . . .
13. *δημοσιου πυρο*[*υ*] . . .
14. *δημοσιων . . .*

III.

1. . . . *καισαρος Τιτου Αιλιου Αδριανου Αντωνινου*
2. . . . *δ̄ δια της Μελανους τραπ*[*εζης*] *αντ*[*εγραφον*] *Τυχαιου*

3. . . . [*Η*]*ρωνος του Χαιρημονος*
4. . . . *Ηρωνος απο κωμης Φιλογριδου*
5. . . . [*Περ*]*ση της επιγονης L λδ · υπο πληως Αρι . . .*
6. . . . *Ηρωνος Χρησιου Κεφατακου*
7. . . . *Αχμιακου Τημνα καταμηνα*
8. . . . *δας τω η εως Τυβη λ̄ του*
9. . . . [*τ*]*ου ενεστωτος ετους ανυπερ*(*sic*) *Θετχ.*

IV.

1. . . . [*καισα*]*ρος Τιτου Αιλιου Αδριανου Αντωνιν*[*ου*]
2. . . . [*αθυ*]*ρ κθ δια της Μελανος* (*sic*) *τραπεζης αντι*-[*γραφον*]
3. . . . [*Σ*]*αραπιωνι Σαραπιωνος του Ηρωνος . . .*
4. . . . *Περση της επιγονης* [*εως*] *L κζ υπο πλ*[*ηως*] . . .

In another document (No. 401), unfortunately in a badly damaged condition, which is addressed by Theôn the son of Oriôn (*παρα ε*[*μ*]*ου Θεωνος Ωριωνος*) to a certain "priest" and "prophet" (*εξηγητ*[*η*]), the date is given as "the 20th year of the deified Ælius Antoninus" (*του κL Θεου Αιλιου Αντωνεινον*). The contracting party is described as living in the "street" or "quarter of Lysanias" (*επ*[*ι α*]*μφοδ*[*ου*] *Λυσανιου*).

A second damaged document (No. 83) is addressed by Theôn the son of Ptolemy, "from the middle of the quarter of Boulo . . and a Persian by descent" (*παρα μεσου επαμφοδ*[*ου*] *Βουλ . . . [Περ*]*ση της επιγονης Βουλομ . . .*), to Maro the son of Mysimnôn, in "the 4th year of Hadrian Cæsar." It was stipulated that he should receive the third part (*τηι τριτομερι*) of the produce of the vines and palm-trees (*φοινικης*) on a certain piece of land which was mortgaged or sold. Reference is made to "the archons" (*τους αρχοντας*) but the fragmentary character of the papyrus makes it impossible to say in what connection.

A similar fate has befallen another deed relating to an *εγδωσιν* or mortgage (No. 69).* Here a lady is exhorted to "cure her stupidity and ignorance by seasonable inattention to business" *τ*[*ην*] *εαυτης και τε αν*[*αι*]*σθησιαν και τε αγνωσιαν ανιασθω μοιριοις ευαχρηματισμοις.*

Equally provoking is the state of another letter (No. 56), the writer of which says that he had sent 150 dried figs (*εκατον πε*[*ν*]*τηκοντα ισχαδες . . . και ταυτας σοι επεμψα*). Notice seems also to be taken in it of the sailing of a sacred ship up the river (*αναπλευσοιη ιρα* [*κατα*] *καιρον ανωθεν*).

47. It is more profitable to turn from these broken

* The *κάϊς* was a particular species of Egyptian palm, the name of which has not hitherto been met with in the papyri or on the ostraka, where *φοῖνιξ*, on the other hand, is not uncommon.

* The deed is written on the back of a sheet of papyrus which has been scrawled over with large but badly formed capitals. The writer of the latter pronounced Greek as badly as he wrote it, if we may judge from the spelling *πηηροφορουσα* for *πληροφόρουσα* or the expression *το πατρουν αλλαγμα* (*sic*).

records to an interesting document (No. 197) which has been preserved in a fairly complete condition. As it deals with the taxes imposed upon the fellahin in the neighbourhood of Arsinoê it is particularly worth attention.

1. Και του γεωργουντος Ο(?)ναικην γην απο της μητ[ροπολεως]
2. προς καιρον της γεωργιας παρεμδημουντος εις τ[ην]
3. κωμην προς την της γης υπηρεσιαν
4. Ομοιως ο και ευπορος Θλοηγοις ο του Ομματους
5. δια Ηρωνος νεωτ[ερου] Ηρωνος ιερε[ως] απο ... ⏜ κ ...
6. Και των γεωργουντων προσοδικην επημονη [γην]
7. α V̄ ομολογου τας γραφας της κωμης
8. Ηλης Ηρακλα[τος] του Πα[πα]ουτος ων ... ταμιευς ...
9. προσοδος αt ι^ε γ[εγραφε] ... κθ
10. Και του ...
11. ενδημουντ[ος εις την] κωμην ...
12. αV̄ ...
13. Ορενς υιος ... το υστατον μερ[ος] ...
14. Διδ[ας] Χαιρημον (*sic*) ο του Χαιρημονος ομοιως
15. ⏜ κα αt ι^ε γ[εγραφε] ⏜ β δ ⟨C̄ | ⏜ κγ δ ⟨C̄
16. Χαιρημων Διδα ομοιως ⏜ ιη ⟩
17. Αρποκρατιων Δημητριου του μησθα[φορον] ομοιω[ς] ⏜ ιβ
18. Σωκρατης Πρωτα του Πρωτα ομοιως ⏜ κα ⟩

"And of the cultivator of the ... land from the capital (Arsinoê), who goes into the village at the time of cultivation to work the land: likewise also the wealthy Thloêgois the son of Ommatês [has paid] through Hero the younger, the son of Hero the priest, from ..., twenty ... obols. And for the cultivators of the continually productive land one drachma 5 obols we acknowledge (to have received according to) the village registers. Hêlês the son of Heraklês the son of Papaus [who is the assistant?] of the steward (has paid) rent at 3 obols an ardeb. He has registered it. ... [In all] 29 [obols] ... And for the [cultivator of the ... land from the capital], who goes [into the] village to work the land: 5 obols an ardeb (has been paid). Oreus the son of ... the last share ... Didas Khairêmôn the son of Khairêmôn likewise (has paid) 21 obols; 3 obols an ardeb he has registered. Two obols, 16 copper drachmæ. In all, 23 obols 16 copper drachmæ. Khairêmôn son of Didas likewise (has paid) 18 obols. Harpokratiôn the son of Dêmêtrios the mercenary 12 obols. Sôkrates Prôtas son of Prôtas likewise has paid 21 obols."

To a later date belongs a list of tax-payers drawn up on "the 25th day of Tybi" by a certain Tymeus (Τυμεως Εριαν.) (No. 244).

1. Ηρακ[λειδης] Αρμυσις
2. Ηρακ[λειδου] υιος — S η−|
3. Ορεστης Βατρου — S η−|
4. Αρμυσ[ιεως] υιος — S η−|
5. Πασσως Πασωτ[ος] — S η−|
6. Τουανις ... — S η−|
7. Ονωφρις Κρονιδ[ου] — S η−|
8. Αροβιως Κρονιδ[ου] — S η−|
9. Ψοσνευς Ναραυτ[ος] — S η−|
10. Ορσευς Μαραμκ. — S η−|
11. Ορσευος Βαφις — S η−|
12. Παπαητως Μαραμκ. — S η−|
13. Πετεσουχ[ις] Πεκεως — S η−|
14. Πανηεις —— — S η−|
15. Αρμυσις —— — S η−|
16. Κοιμις και Μυσι[ς] ο ν[εωτερος] — S η−|
17. Ωσις Ψενεπνουτ[εως] — S η−|
18. Αρμυσις —— πρεσβ[υτερος] — S η−|
19. Ψενεπνουτις — S η−|
20. —— S ρνβ—ρν[παρας] δα[πανη]−ξ — ι S ρνβ−ϝ ι<
21. Ιβιωνος ιερε[ως]
22. Πεκυσις —— — S η−ιγ
23. Αρεωτης Πεκυσις — S η−ιγ
24. Αραμυσις ... υτου — S η−ιγ
25. Μαρ[ων] Ηρωδου — S δ−β ϝ δ
26. λοιπο[ν] δαπανη[ς] — μβL
27. / ϛ κη − ο θ L

Each of the persons named in the list of Tymeus paid 8 drachmæ, the sum total amounting to 152 drachmæ of "dirty" coin. The expenses of collecting the money, or the loss on the value of the silver, came to 60 obols, and a series of symbols accordingly is used which signify "in all drachmæ 152 less 10 drachmæ" (or 60 obols).

Ibiôn's account was more complicated. He received from three persons 8 drachmæ 13 obols each, and from a fourth, Maro the son of Herod, 4 drachmæ 2 obols less 4 obols. The other expenses came to 42 obols, the whole amount received being accordingly 28 drachmæ less 79 obols.

48. I will now pass on to another class of documents discovered by Mr Petrie. These are the household accounts and private expenditure of the scribes who superintended the public office. No. 245 is a good example of this class, and in excellent condition. English housekeepers may be interested in knowing what was the daily expenditure of an Egyptian official some fourteen hundred years ago, and what were the articles required for his daily use. It need hardly be said that the handwriting is as hasty and bad as that of the most careless calligraphist at the present day.

1. Μεχιρ $\overline{ιθ}$
2. ισχιε[ς] Ϛ κ και παρ[α] σου ι[σχυν] Ϛ λ ε και παρ[α] Ϛ κ
3. $\overline{α}$ κατα ο[μ]ολογιαν] Ϛ $\overline{δ}$ χαρτιδ[ιων] Ϛ η
4, 5. The next two lines are obliterated.
6. κρεος (?) Ϛ a = ι
7. χαρτου ⊀ β
8. κναμω[ν] ⊀ β $\overline{ιδ}$ . . . —
9. ηπατος / ελαιου γ
10. $\overline{β}$ ερεβινθ[ων] = ερ[ε]β̣ι[νθων] =
11. καλα[μων] = καλ[αμων] =
12. ελαιου ⊦ κεφ[αλης] —
13. κναμ[ων] ⊦ Γ Ϛ a ⌣ ι
14. καλα[μων] γ . . .
15. Ϛ κ Ϛ οινο[υ] Ϛ γ —
16. $\overline{γ}$ κρεος Ϛ a — ερεβ[ινθων] =
17. κεφαλ[ης] — κα[λαμων] =
18. . . . — ελαιο[υ] γ
19. αλη[τος] — // κη (?)
20. ερεβινθ[ων] ⊀ α επιουσι[ων] Ϛ
21. καλαμ[ων] =
22. ελαιου ⊦ ερεβ[ινθων] =
23. / Ϛ κη —
24. $\overline{δ}$ κρ[εος] Ϛ a καλ[αμων] =
25. ερεβινθ[ων] ⊀ αρτιδ[ιων] —
26. καλαμ[ων] =
27. αρτιδ[ιων] — / Ϛ a ⊀
28. γλιμ. ι
29. καλα[μου] ι ις κειλο[υ] Ϛ a —
30. . . . ι
31. . . . ι
32. συκεια — ερεβ[ινθων] =
33. ελαιου ⊀ αρτιδ[ιων] —
34. / Ϛ γ σινη[λου] ι
35. Γ Ϛ γ = καλα[μων] =
36. $\overline{ι}$ ορ[νιθιων] [Ϛ] a — ορυζας (?) ⊦ =
37. δαπανη[ς] . . .
38. χαρτιδ[ιου] — / Ϛ β $\overline{ϛ}$
39. καλα[μων] =
40. χυτρ[ας] — ιζ κειλο[υ] γ ⊀
41. αλος Ϛ ορυζο[ς] β
42. αλη[τος] — ερεβ[ινθων] —
43. ερεβινθ[ων] ⊦ αρτιδ[ιων] —
44. ελαιου ⊦ καλαμ[ων] =
ελαιου ⊀
45. / Ϛ γ = στιφαν[ης] =
46. $\overline{ζ}$ ορνιθ[ιων] Ϛ $\overline{δ}$
47. κρεος Ϛ a — Ϛ β ι =
48. αλος ⊀ τη καλαμ[ων] =
49. κεφαλ[ης] —
50. αρτυτικ[ων] ⊀ βρωμα[τος] =
51. καλαμ[ων] —
52. αρτιδ[ιων] = αρτιδ[ιων] —
53. ωων —Ϛ ελαιου ⊦
54. ερεβινθ[ων] ⊦ / Ϛ a =
55. ελαιου ⊦
56. εμοι ⊀
57. ζωαρι[ου] ι or γ
58. ο αμα γ or ι
59. ονου ——
60. [/ Ϛ] . . .
61. $\overline{ξ}$ . . .
62. σαγεσφ[ορου] Ϛ δ
63. συλλογ[ης] κλ[λων] Ϛ $\overline{δ}$
64. κρεος Ϛ a —
65. αβαριον(*sic*) Ϛ a —
66. κεφαλ[ης] ι
67. ερεβ[ινθων] =
68. λαχα[νων] —
69. [σ]ιαλου —
70. ελαιου ⊦
71. / Ϛ Ϛ ⊀
72. $\overline{η}$ κρεος Ϛ a —
73. οβαριον Ϛ a —
74. ταριχ[ους] =
75. καλαμ[ων] =
76. κναμ[ων] ι
77. ελαιου ⊦
78. ερεβινθ[ων] ⊦
. . .

"Mekheir the 19th. You have received 20 drachmæ, and I have received from you 35 drachmæ, and from the 20 drachmæ [are subtracted] 4 according to agreement, 8 for paper . . .

"[First day]: Meat, 1 drachmæ 2 obols; paper, 4 obols; beans, 4 obols; liver, 1 obol.

"Second day: chickpease, 2 ob.; reeds for fuel, 2 ob.; oil, 3 ob.; beans, 3 ob.; fuel, 3 ob.; in all, 25 dr.

"Third day: meat, 1 dr. 1 ob.; sheep's head, 1 ob.; . . ., 1 ob.; flour, 1 ob.; beans, 3 ob.; fuel, 2 ob.; oil, 3 ob. In all, 28 dr. 1 ob.*

"Fourth day: meat, 1 dr.; lentils, 3 ob.; fuel, 2 ob.; bread, 1 ob.; glue(?), ½ ob.; a reed, ½ ob.; . . ., ½ ob.; . . ., ½ ob.; figs, 1 ob.; oil, 3 ob.; *in* all, 3 dr. The whole sum is 3 dr. 2 ob.

"Fifth day: birds, 1 dr. 1 ob.; sundries, [1½ ob.]; paper, 1 ob.; fuel, 2 ob.; a pot, 1 ob.; salt, ½ ob.; flour, 1 ob.; lentils, 3 ob.; oil, 3 ob. In all, 3 dr. 2 ob.

"Sixth day: birds, 4 dr.; meat, 1 dr. 1 ob.; salt, 3 ob.; a sheep's head, 1 ob.; seasoning, 3 ob.; fuel, 2 ob.; bread, 1 ob.; eggs, 1½ ob.; lentils, 3 ob.; oil, 3 ob.; for myself, 4 ob.; a pet-dog, 3 ob. [or ½ ob.]; the man with it, 3 ob. [or ½ ob.]; an ass, 1 ob.; [in all] . . .

* It ought to be 28 drachmæ 2 obols.

"[Seventh day]: . . . [5 dr. ½ ob.]; the cloak-bearer, 4 dr.; collecting the donkeys, 4 dr.; meat, 1 dr. 1 ob.; fish, 1 dr. 1 ob.; a sheep's head, ½ ob.; lentils, 2 ob.; salad, 1 ob.; lard, 1 ob.; oil, 3 ob.; in all, 16 dr. 4 ob.

"Eighth day: meat, 1 dr. 1 ob.; fish, 1 dr. 1 ob.; salt fish, 2 ob.; fuel, 2 ob.; beans, ½ ob.; oil, 3 ob.; lentils, 3 ob. . . .

[In a different handwriting]: "Fourteenth day: . . ., 1 ob.; oil, 3 ob.; lentils, 2 ob.; fuel, 2 ob.; a sheep's head, 1 ob.; in all, 1½ dr. . . . wine, 3 dr. 1 ob.; lentils, 2 ob.; fuel, 2 ob.; oil, 3 ob.; 2 ob. . . .

"Fifteenth day: for the day's expenses, ½ dr.; lentils, 2 ob.; fuel, 2 ob.: bread, 1 ob. In all, 1 dr. 4 ob.

"Sixteenth day: a donkey, 1 dr. 1 ob.; lentils, 2 ob.; bread, 1 ob.; beet-root, ½ ob.; fuel, 2 ob.; rice (?), 5 ob.; in all, 2 dr. 5½ ob.

"Seventeenth day: a donkey, 3 ob.; rice, 4 ob.; lentils, 1 ob.; bread, 1 ob.; fuel, 2 ob.; oil, 3 ob.; a garland, 2 ob.; in all, 2 dr. 4 ob.

"Eighteenth day: fuel, 2 ob.; food, 2 ob.; bread, 1 ob.; oil, 3 ob.; in all, 1 dr. 2 ob."

The account has been rendered by the cook or steward of some superintendent of the tax-gatherers, from whom he had received at the outset 35 drachmæ. The two handwritings in which the accounts have been kept do not imply a change of purveyors, but only that two different public scribes or friends had been employed in noting down the current expenditure of each day. It would seem that on the third day the purveyor tried to cheat his master out of an obol, an attempt not unfrequently made even in these modern times. In fact, the whole document comes home with peculiar force to any one who has lived on board a dahabiah without a dragoman. The cook, under such circumstances, is accustomed to receive a certain sum of money on account, and out of this to purchase what is necessary until it is expended, when he submits his accounts and receives a fresh sum of money. Each item of expenditure is duly set down, usually by some friend who is skilful in arithmetic, and at the end of each day the various items are added together. We have only to change the Greek into Arabic, and the papyrus might easily be a page from the book of a modern Egyptian housekeeper. Even the articles bought are much the same as those which would appear in a similar account-book to-day. Instead of reeds, it is true, charcoal or the dry stalks of the sugar-cane would be entered under the head of fuel, and perhaps the "garland" or nosegay would be omitted, but otherwise the ancient and modern lists would bear a striking resemblance to one another. The donkey, however, would receive one name only, and not two; what difference may be intended between ὄνος and the rarer κίλλος (written κτίλος) it is difficult to determine. (The usage suggests that ὄνος may be a saddle-ass for riding, and κίλλος a donkey for baggage or farm stuff.—F. P.)

49. Dr Wilcken has shown that in the Roman age the nome and capital of the Fayûm were divided into three parts, called after the names of the Greeks Hêrakleidês, Themistês and Polemôn. It is possible that the latter name is to be recognised under the corrupt form of Polômôs in No. 166, line 6. At all events reference is here made to a village in the vicinity of the capital Arsinoê, which probably bore the name of Magdôlos or Magdôlion. We hear of another village in No. 116, named that of Philogridês.

The capital itself was divided into quarters, one of which, we learn from No. 223, was termed Marasza the quarters again being subdivided into streets. At the northern end was the great temple, where, as we are informed by No. 196, there stood the sacred image of a hawk, the symbol of Horos, protected by guardian priests. The special object of worship, however, to the inhabitants of the Fayûm was the crocodile-god Sebek, called Sukhos by the Greeks, and one of the fragments of papyri in Mr Petrie's collection (No. 71) makes mention of "Bakhis the priestess of Sukhos." In one part of the city were salt-pans, such as still exist among the mounds of the ancient Arsinoê, and the streets were full of busy artisans, among whom we may include cooks. The population was doubtless mainly "Macedonian" or Greek, but we find from Mr Petrie's papyri that there were individuals in it who traced their descent from a Persian family, while the fellahin who worked in the neighbouring fields were, of course, native Egyptians.

Accounts were kept in silver drachmæ, obols, and copper drachmæ. Thanks to the labours of Wilcken, Revillout, and Wessely, we now know that, while 6 obols went to the silver drachma, the obol itself was worth 120 copper drachmæ, at all events in Ptolemaic times. In the Roman age a discount was taken off what was called "dirty" silver (ἀργύριον ῥυπαρόν), the ostraka of the period of the Antonines being particularly frequent in their mention of it. The symbols employed to denote the various kinds of currency are numerous, and at present but imperfectly determined. The most common of these, that which denotes the silver drachma and has the form of an S, has been considered by M. Revillout to represent the half-drachma in the papyri; but on the ostraka it signifies

the full drachma, and certain of Mr. Petrie's papyri, Nos. 244 and 245 for example, show that it must have the same value in them.

Besides payment in cash, payment was also made in corn, the standard of measurement being the *artabê*, which in Ptolemaic times was equal to the English bushel, or in the Roman age to two-thirds of this. The artabê is denoted by a peculiar symbol in the papyri and on the ostraka, closely resembling that used for obols in No. 197.*

As might have been expected, bankers abounded, money-lending and exchange being two of the most profitable parts of their occupation. Each bank or τράπεζα was named from the individual owner who presided over the "table," or counter, belonging to it. Thus in the time of Nerva Trajan we hear of the bank of Sarapion at Arsinoê (No. 303), in the time of Hadrian of that of Melanês (No. 116.) The bankers were public notaries, and deeds seem to have been deposited with them. In No. 44, Epiphanês, the son of Sukhiôn, "sends greeting" to Masis (?), the son of Diogenês the banker, and refers to a certain χρηματιστής or "agent" of his who bears the Roman name of Gaius Paccius, the son of Nonius Pontius. In this document the word for "banker" is written τραπεδέτης, the Egyptian pronunciation of τραπεζίτης.

It will be seen from the foregoing account what a wealth of information we may yet expect to glean from the papyri discovered by Mr Petrie. But the harvest will be a work of time. Most of the papyri are in a mutilated and fragmentary state; some of them, indeed, are mere scraps; and the multiplicity of cursive hands which they contain makes the decipherment of them difficult. But with the help of similar papyri, now in the museums of Paris and Berlin, the work, however laborious, will be hereafter accomplished; the lacunæ the fragments present will be filled up, and the symbols which still baffle the decipherer will be all explained. We shall come to possess an intimate knowledge of the internal administration and financial condition of the Fayûm during the Ptolemaic and Roman ages, and shall be able to form a comparatively detailed map of the villages it embraced and the streets which intersected its capital.

The mere mention of the number of the fragments collected by Mr Petrie is the best proof of their importance to the historian of antiquity, when they can be fully explained and compared with the other papyri from the Fayûm which are now in Europe. They amount altogether to 480, exclusive of 35 small fragments from the mounds of Arsinoê itself, which are mostly of comparatively late date. Almost all the papyri are in cursive forms of writing, and consequently of the greatest value to the palæographer. One of them (No. 76) still has attached to it the clay seal which made it valid. The deed is complete, but unfortunately the ink is so faded as to oblige me to leave the task of deciphering the whole of the document to others. It is addressed by a certain Pammenes to Alkinos, the brother of Themistês, and begins with the statement that "you will do well in being in want of another little letter" (*Παμμένης Ἀλκίνοι θεῖμ. ἀδελφοὶ χαιρὶν· καλῶς ποιησὶς ἄλλου ἐπιστολίον ἁμα προσδεηθὶς ἁμα . . .*) May many more such "little letters" be found and deciphered!

50. List of Papyri found at Hawara, 1888:—

1–12. Hieratic and Demotic fragments.
13. Red ink stamp of a Ptolemy, year 37; back, names, 2 l.
14. Deed of property naming boundaries; 13 l., frag.*
15. Literary; fine capitals, critical marginal notes. Small frags.
19. Values in Latin; small frags.
22. Coptic? VIIth cent.; small frags.
23. Coptic Service-book; small frags.
24. Copy-book, Latin, "Non tibi Tyndaridis facies"—Æneid. ii. 601; 6 l. each side, frag.
29. Taxes, Anoubas Podokepharos, etc.; 10 l., VIIth cent, broken.*
30. Deed of Antonios. Deed of Dioskouros. 22 l., frags.
35. Letter from Kô(nstantinos?) Episkopos; 6 l., frags.
41. Receipt for 10 drachmæ by Quintos Senas, 1st year Tiberius; 7 l., entire.
44. Receipt of Epiphanios son of Soukhion; 4 l., frag.
45. Marriage contract; 8 l., frag.
55. Contract; 14 l., nearly entire, but damaged.
56. Letter about 150 dried figs; and Sacred boat. 22 l., broken.
60. Two receipts; *temp.* Tiberius. 10 l., broken.
64. Letter; 10 l., frag. Sebennautos.
66. Accounts of corn; 12 l.
68. Contract; Theon, son of Asklepias. 7 l., frag.
69. Letter; 11 l., frag. Back, different hand; 15 l., frag. letter.
70. Farm accounts; 3 cols. 22 l., parts broken.
71. Accounts; 2 cols. 15 l., parts lost.
72. Accounts, farm; "seed," "hay," etc. 2 cols., 18 l.
73. Copy of letter to Tamatesis; 7 l., parts lost.
75. Money accounts; 4 cols., 24 l., parts lost. Back, parts of contracts.
76. Letter from Pammenes to Alkinos brother of Themistes; with seal. 10 l., entire, words lost.
78. Contract; 15 l., frag.
79. Contract; 15 l., frag.
80–1. History of Sicily; 20 l., frag. By Timaios?
83. Letter from Maron in 4th of Hadrion; 30 l., frag.
95. Accounts; 7 l., entire, damaged.
101. Dated 2nd year (Tiberius?); frag.
105. Letter from Sarapion of Bubastis to his sister; 5 l., broken.
115. Accounts; 12 l., frag.

* *Frag.* fragment, with lines incomplete; *broken*, part gone, but lines whole.

* The latter symbol has developed out of the symbol $\sim\!\!\!\!\!\!\bigcirc$, used in No. 198, which is itself a transformation of ὀβ[ο]λ[ὸς].

116. Letter, under Hadrian; 16 l., frag. Letter, under Antoninus; 14 l., frag. Back, two similar fragments.
132. Letter, under Trajan; 20 l., frag.
164–5. Letter on business; 9 l., frag.
166. Deed of 10th of Tiberius, and another of 1st of Hadrian; both of Akhillis dau. of Herakleides. 19 l., broken.
188. 19th account of Petes, toparchy Moukhis. 17 l., entire.
196. Accounts, good; 23 l.
197. Regulations and accounts; 16 l., broken. Back, accounts.
198. Accounts; 22 l., good. Back, 15 l., similar.
199. Accounts similar.
200. Accounts of corn, etc.; large frags.
201–2. Accounts; large frags.
207. Letter; 22 l., frag.
208. Accounts, 11th of Tiberius; 14 l., broken.
210. Accounts; 19 l., broken.
212–14. Accounts, 15th of Tiberius; 11 l., frag.
220. Accounts of Andronikos, tax-gatherer; 12 l., broken.
221. Letters, official; 30–40 l., broken.
222. Accounts; 16 l., frag. Back, official letter; 12 l., frag.
223. Deed, 5th of Trajan; 22 l., nearly entire.
224. Letter, official; 14 l., frag., 2nd of (Trajan ?).
228. Accounts; 3 cols., 7 l. Back, 11 l., entire.
229. Accounts; 12 l., frag. Back, 9 l., frag.
232. Accounts; 16 l., frag. Back, 13 l., frag.
233. Letter, official; 18 l., frag.
238. Letter, official; 12 l., under Tiberius.
243. Letter; 12 l., frag.
244. Accounts, 42nd of Augustus; 35 l.; back, 17 l., entire.
245. Accounts of household expenses; 110 l.
246. Accounts, 14th (of Augustus?); 12 l.
254. Letter; 12 l., frag.
256. Accounts; 16 l., frag.; also back.
257–8. Accounts, official.
298. Letter of 4th of Trajan; 7 l., perfect.
303. Deed of 13th of Trajan; 22 l., perfect.
312. Deed; 14 l., frag.
321. Letter, under Titus; 26 l., broken.
327. Accounts; 14 l., broken; back same.
328. Accounts; 22 l., broken.
364. Accounts; 31 l., frag.
381. Accounts; 11 l., frag. Back, deed; 8 l., frag. Under Vespasian.
385. Accounts; 9 l. entire, and 11 l. frag.
401. Letter, under Aurelius; 21 l., broken.
418. Deed of 15th Hadrian; 9 l., frag.
441. Letter, naming Aphroditopolis; 9 l., frag.
472. Deed; 24 l., frag.
491. Accounts; 27 l., 2 cols. entire, damaged.
492. Accounts; 18 l., frag.

The pieces not described here are fragments of a dozen lines and under, of accounts, letters, and deeds.

51. The Greek inscriptions.

Plate
VI. 8. . . . Pharmouth 24, of Marreiês. . . . the Pastophoros; . . . . . and priest . . . . . the stone (tomb?).
VII. 1. Ptolemy son of Tyrannos, he lived . . . . and the (daughter or wife) Thermoutha lived years 4—Innocent. Farewell to ye.
VII. 2. On behalf of King Ptolemy . . . . . Petenephies (son of the pro)phet Soukhos . . . . . .
VII. 3. Tyrannos son of Ptolemy. . . . . .

Plate
VII. 4. Theon son of Heraklides, cut off untimely, good. Farewell. Died year 6, Khoiak 9th; aged 19.
VII. 5. Didymos the turner. Alive I wrote it, and here I lie, aged 66. (Note that the age has been scratched in by a later hand, the place having been left blank by Didymos.)
VII. 6. Dios, aged 55. Innocent.
VII. 7. Kaiap . . . . and Herais . . . . his wife. Innocent.
VII. 9. Valerios, aged 44.
VII. 12. Blameless among mortals, in business the best of men, was Loukios E . . . . . teimos and . . .
VII. 13. Isidora, farewell, and be of good courage; aged 49.
VII. 16. Demetrios, aged 1 year. (This is finely cut on a lintel stone.)
VIII. 1. Diogenes of The Flute (sign of a house?) of Arsinoe.
VIII. 2. Diogenes who abode as the harp when he was alive. . . . (He appears to have been a Syrian musician by the word Nabal. The cloth, fig. 2, is from the mummy; and the label, fig. 1, was attached to it.)
VIII. 3. Boubastos of the gate of the Thermouthiac quarter of the metropolis of Arsinoe.
VIII. 4. Dêmôs, aged 24, never to be forgotten.
VIII. 5. Soukhas, brother of Didas, of the *Vicus*.
VIII. 6. (This is) the body of Apollinarios, son of Diokles the wool merchant of Arsinoe.
VIII. 7. Pantagathos of the Arsinoite nome.
VIII. 8. In peace was laid the soul of Peter.
VIII. 9. Thermouthis, son of Petesoukhos.
VIII. 10. Sabinos . . . Innocent . . . .
VIII. 11. . . . . rra . . . . of Anytos, unforgotten for ever.

CHAPTER VI.

THE PICTURES.

By Cecil Smith.

52. From the foregoing Chapter III. the following facts seem to have been clearly established:—

(1) That the majority of these paintings are to all intents the work of Greek encaustic * artists.

(2) That they were executed in melted wax with a brush and a fine stump, possibly of metal.

(3) That their dates may be ranged with certainty within a narrow limit, beginning with the era of Hadrian.

We will first briefly examine how far these conclusions correspond with what we already know of the Greek methods of painting, and how far they show us new lights on ancient life and art.

The controversy that has raged over the question of encaustic painting has chiefly centred around the well-known passage of Pliny, N.H. xxxv., § 149: "*Encausto pingendi duo fuere antiquitus genera, cera, et in ebore, cestro id est vericulo, donec classes pingi*

* This term may be retained for general use, though the present portraits are not fused-in or "encaustic" in the strict sense of the word.

coepere. Hoc tertium accessit resolutis igni ceris penicillo utendi, quæ pictura navibus nec sole nec sale ventisque corrumpitur." The description of the third style, which amounts to little more than a mechanical process for preserving shipping, presents no difficulty: what were the two other methods? The question depends upon the punctuation of the words *cera et in ebore cestro.* Donner, whose view is most generally accepted, thinks the two processes are to be distinguished according to the material on which they are laid. Wax and the cestrum are employed in both cases; but the wax is laid in the first case (as Pliny takes for granted) on wood, in the second case, on ivory.

Among the alternative interpretations at present offered, the only other practicable one seems that of Welcker, who takes the words *et in ebore cestro* together, and considers the two cases as (i.) wax, *i.e.* wax on wood; (ii.) ivory with a cestrum. He considered that in i. the wax was resolved with volatile oil, laid on with a brush, and then melted *ad libitum* with the red-hot metal implement. Against this it is objected that wax being undoubtedly employed in all processes, the word *cera* would not have the exclusive sense attributed to it by Welcker; and, moreover, most archæologists have argued that the brush was certainly not employed in encaustic at all.

Now, with regard to the interpretation of the disputed passage of Pliny, I think we have a valuable piece of evidence in the words of that author himself. In xxxv., § 147, or only a few lines previously, he has been discussing the works of the lady painter Jaia (or Laia): "*Et penicillo pinxit et cestro in ebore imagines mulierum maxume et Neapoli anum in grandi tabula, suam quoque imaginem ad speculum.*" Here there is no question but that the words *cestro in ebore* are to be taken together as opposed to *penicillo:* her two methods of portrait-painting were (i.) with the brush, *i.e.* probably in tempera, as Pliny elsewhere uses *penicillum* in this application; (ii.) with the *cestrum* on ivory. I cannot help thinking that the application of the *cestro in ebore* in § 147 is the same as that of *in ebore cestro* in § 149, and that Welcker is so far right that these words in both cases must be taken together. We thus, in the two passages, have three kinds of painting mentioned, viz. (i.) *Cera;* that is, encaustic painting proper: (ii.) *Cestro in ebore;* or encaustic on ivory: (iii.) *Penicillo,* or tempera.

It will be noticed that none of these terms as used by Pliny can possibly be taken as exclusive: I mean that, though the first is called "wax," this does not at all imply that wax was not used in ii., just as the cestrum is used in both i. and ii. Pliny classes his methods popularly, according to the prominent feature of each. On the same analogy, then, I think that we may very well extend the use of the brush to the methods i. and ii., and thus get rid of the grave practical difficulties which confront us if we are, with the German critics, to imagine painting in any form without a brush. They do not attempt to explain how the delicate drawing, for instance, of an eye is to be accomplished by plastering on a sort of syrupy compound with a spoon. No amount of melting or subsequent working up with a *cestrum* could possibly suffice; besides, why should it? Why, knowing the use of the brush, the ancient artists should deliberately have hampered their powers in settling to work only with a spoon and fork, so to speak, I cannot understand.

As a matter of fact, the question is settled beyond a doubt by the pictures now before us, and it only remains for us to reconcile the use of a brush in encaustic painting with the evidence of Greek literature. I would submit the explanation which I have given above as a reasonable interpretation of the passages in question, and one which has the advantage at least of being practicable.

It may be urged that the pictures before us are not works of encaustic proper, because, as Mr Petrie says, the heat of the sun was probably strong enough to render the wax sufficiently liquid for use, and therefore the burning in, which gives the process its name, would not be necessary. To this I would reply, that the process is here seen in its natural state; the Greeks almost certainly derived the art from Egypt. Indeed, it is only natural to suppose that a process like this should have had its origin in a country where it was perfectly simple and easy of execution, rather than in Greece where the necessity of using artificial heat rendered it extremely laborious and difficult. The Greeks, in borrowing the idea, were forced to adopt artificial methods, such as hot palettes, etc., for keeping the material in a workable condition; no wonder, then, that they called it encaustic—a term which expressed to them the characteristic feature of the process.

53. The earliest mention of the use of encaustic painting in Greece proper is probably that in the ode falsely attributed to Anacreon. "Paint me my mistress with her soft black tresses, and, if the *wax* can do it, paint them breathing of myrrh." Beyond this poem of very uncertain date we have nothing in literature which refers to encaustic earlier than the age of the Greek anthology; and, although Pliny mentions vaguely that many of the great Greek artists from Polygnotos downwards employed it, in all probability it did not come into general use for

easel-pictures in Greece before Alexandrine times. In Egypt, on the other hand, the process was perfectly well known at a very early date; it was naturally the heritage of a people who for thousands of years had executed coloured drawings and writings. It was, however, chiefly after the Macedonian conquest that the art of painting developed in Egypt, and in this connection we find numerous names of painters famous in Greece or Italy, whose origin or native place was Egypt: Antiphilos, for instance, a Hellenistic Egyptian, worked at Alexandria, and was the successful rival of the great Apelles; Helena, the daughter of an Egyptian Timon, said to have painted the battle of Issos; Demetrios and Serapion of Alexandria, who worked in Rome in the last two centuries B.C.; and Aetion, who in the time of Hadrian painted the marriage of Alexander to Roxane.

In the first century of the Christian Era encaustic painting seems to have become in great measure a Christian art. St. Luke is said to have painted in encaustic a portrait of the Mother of God; and we have frequent mention of it in the writings of Eusebius and St. John Chrysostom. We are accustomed to think of the introduction of oil-painting by the brothers Van Eyck as a new discovery, but as a matter of fact this process is merely a derivation from encaustic, of which the record remains almost unbroken down to the fourteenth century. It has been thought that the appropriation of wax to so many other ecclesiastical uses may have contributed to the gradual disappearance of the art which mainly depended upon this material. Otherwise, there seems no reason why encaustic painting, as practised by the ancients, should not have held its own among the various processes of to-day. It has this advantage over oil, that the wax allies with all colours, does not crack or flake off, and preserves the material on which it is laid against dust and damp. The picture can be retouched indefinitely without the evil effects which the scraping of oil colours produces. In the pictures before us we see to what an extent a semi-relief treatment of the surface may be adopted, and the naturally polished surface requires no varnishing. The character, moreover, of the material itself gives a kind of fading and yet transparent effect, which, when properly handled, is most charming.

54. The fact is that, until the last two years, the list of actual remains available for the study of encaustic painting was very small—and the majority even of these have been in some quarters looked upon with suspicion. There seems no doubt that many of the wall-paintings which have been for a century or more finding their way into museums from the excavations at Pompeii and Herculaneum are executed in the encaustic method, but the means adopted for preserving and restoring them have rendered their evidence practically worthless. A prominent example of this is the nearly life-size bust of a flute-player in the British Museum, which would be probably the most beautiful extant example of an encaustic wall-painting if it had not been injudiciously restored. The instances which have been principally quoted as bearing on this subject are as follows:—

(1) The so-called "Muse" of Cortona; a painting executed in wax on slate with a brush; dug up in a field about 1732: probably cinque-cento work. Andrea Mantegna is known to have worked in the same method.

(2) The Kleopatra found in Hadrian's villa at Tivoli in 1818: interesting as being, if genuine, of the time of Hadrian, to which our portraits belong. Schöner in the *Augsb. Allg. Zeit.*, 1882, *Beilage* No. 227, thinks the antiquity and encaustic technique alike doubtful, since wax and a gum mastic have been found in its composition. The very argument thus used against it might equally be used in favour of its genuineness!

(3) A series of portraits painted on panels identical in style with those of Mr Petrie's excavations. Of these, three are in the Louvre, inscribed with names which identify them with the family of Pollius Soter, archon at Thebes in the time of Hadrian. One is half in the Louvre, half in the British Museum; and two more of the same style in the British Museum; all from Egypt.

These were all that Donner knew when he wrote in Helbig's *Campanische Wandmalerei*. The first two he dismissed as probably false; of the remainder he said that they had been smeared since their discovery with a thick yellowish varnish, and that it was only on that account that they had been thought encaustic at all. Finding, in fact, that none of the actual remains agreed with his theory of encaustic, he settled that it was "tant pis pour eux;" either they were not encaustic, or else they must be false: so that he was able to say, with a clear conscience, "We therefore have no authentic encaustic painting of antiquity"—an excellent example of one form of destructive criticism.

Now, from a comparison of the excellent illustrations in Cros-Henry* of the Pollius Soter pictures with those of the Petrie series, I am convinced that the general condition of those pictures has undergone little or no change; and a close examination of the others in the British Museum does not disclose the

* *L'Encaustique:* par MM. Cros et Henry, Paris, 1884.

slightest evidence of restoration. Mr Petrie's own series, when they were all exhibited together in the Egyptian Hall, were extremely valuable in showing exactly the difference in appearance presented by a restored and an unrestored picture; the restorations in his case being, as they would probably have been in the other cases, necessary for purposes of preservation.

Besides the above examples, there is in Dresden a series which in 1615 were taken by Pietro della Valle from the catacombs of Saqqara, in the Memphite nome. And lastly we come to a series of sixty-six found by the agents of Herr Graf at Rubaiyyat, near Arsinoe in the Fayum, and of which a description is given by Dr G. Ebers in the *Münchenes Allg. Zeitung, Beilage*, 1888, Nos. 135–137.* Unfortunately, no proper records of this find seem to have been preserved, beyond the mere fact of their provenance. There were, however, found with them three small inscribed tablets of wood, which tell us that the necropolis of Rubaiyyat belonged to the harbour or landing-place (ὅρμος) of Kerke, which was in the limits of the Memphite nome.

These portraits are, as Dr Ebers' description shows us, an exactly parallel series to those of Hawara: all of them are busts, some showing the hands, painted in the same method on sycamore wood. From a comparison with the Dresden portraits, Dr Ebers thinks that some of the *worst* are of the time of Hadrian. The best he puts as far back in date as the time of the Lagides. To this result he has been led, as I think, on a false track of reasoning, which he probably would have himself rejected if he had had the opportunity of studying Mr Petrie's examples. Dr Ebers thinks that the mixed types of nationality which he finds in the portraits—Jewish, Greek, Roman, Semitic—point to a period not long after the consolidation of Hellenic life in Egypt under the Ptolemies; he thinks that some of the pictures are so good that they can only have been painted in Alexandria; he finds that the striking realism of the art corresponds well with our received notions of Alexandrian art; and, finally, he observes on one of his male portraits a lock of hair, which he identifies with the "Prince's lock" of Horus, as worn by the Ptolemaic princes. Since the Ptolemaic rule ended with Kleopatra in B.C. 30, he concludes that this portrait, which is not one of the best, dates from the middle or beginning of the 1st century. The better ones, in consequence, he puts at a still earlier date.

Even granting the matter of the lock of hair, which, after all, is merely a sign of a Libyan or Moghrabi origin, and as to which, in the peculiar treatment of the hair in these portraits, one might easily be misled, the evidence for this early date rests mainly upon an imaginary development of style. Now, we have only to look at the portraits in Cros-Henry, figs. 8 and 9, and we see how misleading this test may be. These are two members of the same family, and presumably of the same date, or nearly so, and yet there is a world of difference in the respective artistic merits of the two pictures.

Besides this, Mr Petrie's arguments—founded on the much safer material of the actual finds—seem to me convincing in fixing the bulk of his pictures to the century following Hadrian. This date agrees with the inscriptions found with them; it coincides with the Pollius Soter pictures, with those in the British and Dresden Museums, and with these last Dr Ebers compares the bulk of the Rubaiyyat examples. We thus have for all the examples yet known of encaustic mummy-portraits a prescribed limit of date; the area of their find seems equally prescribed, for all those of which we know the provenance have come either from the Memphite or Arsinoite nome in the Fayum—none have yet come from the neighbourhood of Alexandria: and therefore at present we cannot accept Dr Ebers' theory of the Alexandrian origin of the artists. Apparently at the time of Hadrian this district of the Fayum was inhabited by a large population of prosperous Hellenizing races, intimately connected in customs and religion, as the parallel developments in the different series show. Probably, also, the artists were settled in the locality; the custom of mummifying with a portrait at the head seems to have grown up here, as Mr Petrie points out; and we do not yet know of any instance of it outside this neighbourhood.

The age of Hadrian, who was himself a patron of the arts, in whose time the renascence of archaic Greek art took place, and who visited Egypt, may very well have given an impulse to Greek art in Egypt—an impulse of which the personality of the famous painter, Aetion, at Alexandria, is a striking evidence.

55. The art of portraiture in painting, as in that of sculpture, did not probably come prominently forward until Alexandrian times. It is only in the inscriptions of the last two centuries B.C. that we find the honorary decrees to public men frequently recording the vote of a portrait in marble or bronze to be erected.

* See also the article written in the same journal, *Beilage* No. 180, by Dr Donner upon these pictures. I am sorry not to have had the advantage of knowing Dr Donner's opinion, which was not published until after these remarks had been written. He considers his former opinions as to the technique of encaustic confirmed by these new discoveries. I cannot agree with him.

It was an art that flourished most naturally in a Roman atmosphere: every important Roman house had its *imagines*, the wax masks of its ancestors, hung on shelves in the *atrium*, and which, taken down for the funeral procession, formed the most important spectacle in that procession. The ancestors in the hall were, in fact, a cherished possession; and it brings us curiously down to modern times when we read of the rich parvenus who, having no ancestors in particular, decorated their *atrium* with *clipeatæ imagines*, i.e. bronze or silver or painted portrait medallions, either of the Emperor or other famous personages: even in Pompeii we see the walls decorated with paintings such as these.

The idea of the Roman *imagines* was that of bringing the dead in their living likeness up from the underworld: the notion of perpetuating the dead person's form was thus not confined to Egypt. We find in the earliest times the idea prevalent in other countries of keeping in the face, at any rate, some semblance of the living. In the graves of Mykenæ, Schliemann found on the face of some of the corpses thin gold masks, pressed more or less into a likeness of the dead; we have in the British Museum similar gold masks from Nineveh; and in the Louvre is a whole series from Egypt, where the custom dated from at least fifteen centuries B.C. Benndorf has shown, in his *Antike Gesichtshelme*, how the custom survived, notably in Etruria. The Greeks with their painted and sculptured *stelæ* had the same idea; but it was not probably until Roman times in Egypt that Greeks reverted to the old custom.

Apart from the notices in Pliny and other writers, who name certain painters of later date as having been proficient portrait-painters, we have little to tell us how far this form of art was in vogue. Jaia painted portraits in Rome towards 100 B.C., and is specially recorded by Pliny as having painted her own picture, reflected in a mirror. Protogenes painted the portraits of Alexander, of Antigonos, and of the mother of Aristotle. But probably as yet, for public purposes at any rate, the fashion for portraits was in marble or bronze. In all the honorary inscriptions I can only find one which speaks of a painted portrait; this one (Dittenberger, *Sulloge II.*, p. 592, no. 402), from Patmos, orders that a certain Hegesandros shall be honoured with a gold crown and with a painted likeness, εἰκόνι γραπτῇ; probably a framed bust of himself, to be hung up in the agora or the theatre.

Apropos, however, of our mummy-pictures, one inscription from Athens throws a curious sidelight on the custom. It is the epitaph of a lady, Euanthe, daughter of Ariston of the deme Acharneis, and says, "Her painted portrait we have dedicated in the shrine of Pallas, whose servant she was; but to her body we have given an earthly tomb: that an image of her may not be wanting here also, we have carved her form upon the tomb." It is, perhaps, not entirely a coincidence that the lettering of this inscription marks its date as being not long after the age of Hadrian.

As to the question whether these mummy-portraits were painted during the lifetime of the individual or after death, it is difficult to decide. Mr Petrie states above his opinion that the artists supplemented their sketch of the dead partly from memory and partly from existing portraits. Dr Ebers, on the other hand, acting on his idea that the artists must have come from Alexandria, is led to suppose that, in many cases at any rate, the pictures were done during life, just as the Egyptian kings had their tombs commenced during their lifetime. Of the funeral intention of these portraits there can be no doubt: the painter knew exactly how much of the picture would be shown and how much would be covered by the mummy bandages, and in some cases the cartonnage gilder has worked on the portrait. I am inclined to think that Mr Petrie is right, and that the pictures were painted after death. The style of the portraits is usually conventional precisely in those details which make the difference between one living face and another. The eyes, which, more than any other feature, should impart the living expression, in all these cases are executed in a perfunctory and formal manner. The eyelid of Polygnotos' Helen had written in it the whole seven years of the Trojan war: in these eyes we can read nothing except a fixed, glassy vacancy. And they are, moreover, in many cases, too large for the face. This is not merely due to the inability of the artists, for many of these portraits show a real grasp of character and a distinct technical skill in the modelling, notably in that perhaps most difficult of tasks, the indication of the play of muscles around the mouth.

In that climate the painter would not have been able to work long with his model before him; and these pictures must have demanded consummate freedom and swiftness of execution. In this connection it is curious to note that the artist Jaia is specially described by Pliny as being a quick worker: "*neque ullius velocior in pictura manus fuit.*" That pictures were sometimes painted after death is shown by an inscription quoted by Marini (*Atti*, p. 654), which mentions the picture of a Roman lady painted after her death, "*pingere effigiem . . . . sororis suæ post excessum vitæ suæ.*"

Under these circumstances, I think no one will

deny that the measure of success achieved in some of the best of these portraits is very remarkable. The old man in particular (No. 10.) shows a breadth of style and a quiet humour which reminds us of some of the Dutch masters of the Teniers school. Of course there are good and bad among them: in some cases, as Mr Petrie's classification and the Louvre pictures show, we have good and bad of the same date; the quality probably depended to some extent upon the price which the relatives could afford to pay. One wonders what this price may have been, especially when we read of the enormous sums which great pictures fetched in the palmy days of Greek painting. Most of these people seem to have been well to do, as the gold wreaths of the men and the jewellery of the women prove. We have in the Louvre portraits the family of an archon; but I think Dr Ebers is certainly right in refusing to identify the stripe on the dress with the *Laticlavus* worn by patricians and knightly families. The occurrence of this ornament in our portraits is almost universal, on both shoulders of men, women, and children, and it is quite unlikely that these people could all have been of high birth and position. The ornament is simply what one finds on all the tunics which have come to us from Egyptian sites of this date downwards (see *Cat. of Tapestry in S. K. M.*, pp. 17-45), and has, I think, here no ulterior meaning.

In the absence of any original work of the great Greek artists, it is impossible to estimate precisely what the merits of their art may have been as compared with the art of the Renaissance and modern times: we are limited to the scanty and scattered criticisms and anecdotes of authorities who for the most part display their absolute ignorance of the subject. The story of the sparrows and the cherries proves nothing, as Goethe said, except that the sparrows were very indifferent art critics. Probably a single sentence saved from the books by Apelles would be worth to us more than all the anecdotes of painters in antiquity. But if we may judge from the relics which have reached us; the Campanian wall-pictures, mostly the work of mere decorators of suburban villas; the vase paintings, by men whose very art was hardly mentioned in literature, much less their names; and, lastly, these encaustic portraits, painted in a remote corner of a distant province by local talent not wholly unconnected with the undertaking interest,—if we think what a world of difference must have lain between such men as these and the great painters, the friends of kings, who would not sell their pictures for gold,—we may obtain a faint idea of that which we have lost. In the conception and in treatment of subject, we may be sure that the Greek artists would have had little to learn from ourselves; and these portraits show us that their technical skill and knowledge of their materials were, at least, on a level with our own.

56. The descriptions of the Hawara portraits which follow consist merely of a series of notes which I took while they were on exhibition, with a view of ascertaining, if possible, what distinction of date or style is evidenced in the technique and method of the various examples. The arrangement is the chronological order settled upon by Mr Petrie: my own independent arrangement, from details of style, differed from his so slightly that I have thought it best to follow his order throughout, only inserting the numbers marked with an asterisk in what I would suggest are probably their places. These numbers were left unclassified by Mr Petrie, as not answering to any of his tests.

PAINTED ON CANVAS.

FF. Young child: painted on canvas in mummy-case with hieroglyphics; Greek (?); chubby square face, eyebrows arched and wide apart; hair straight and thin. Body to front, face slightly to r. Shading down r. of nose and under chin; no high lights. Background white, with black strokes (meant for hair?). White chiton, with red riband around neck to which a pendant has been hung (?).

Good drawing, but careless; eyes much too large. The style is difficult to judge, as the paint has cracked and flaked off in places. Deep red tone. The hair is drawn in single fine strokes. The general effect has probably been very good.

YY. Portrait on canvas; lady; Greek.

RED AND GILT MUMMY-CASES.

AC. Young man: in mummy-case, red, with gilt decorations and hieroglyphics; across breast, within two horizontal lines, ΑΡΤΕΜΙΔΩΡΕ · ΕΥΨΥΧΙ. Greek type: oval face, rather thin arched eyebrows, with wide space between. Body to l., face slightly to l.; shading on l. of nose and face, and under lip and chin. High lights down nose and on upper lip, and dot in eyes. Hair dark brown, edge drawn on to background: over it is laid a gilt wreath. Background yellowish drab, smooth and clean, leaving good outline. White chiton, and white himation over l. shoulder.

Careful drawing, but a little hard and mannered; warm brownish tone. Hair smooth and careful, part behind r. ear corrected by work from background. Thin line of Indian red for outline of eyes and nose, and between lips. Shading of drapery in colour of background, hard and angular. The face is good, the drapery sketchy.

AD. Older man: in mummy-case, precisely similar to last, with similar inscription, and portrait (bearded) painted in much the same style: possibly the father of the preceding No. AC.

GILT BORDERS.

Z. Man with slight beard, whiskers, and moustache; body slightly to r.; in white chiton with purple stripe on r. shoulder. Around head, from shoulder to shoulder, a band laid on with relief of tendril and berries gilt. Hair close, curly, carefully drawn; eyebrows a clearly defined arch;

faint light down nose; brilliant spot of light in eyes. Shadows on neck and beside nose rather hard, and chin weak; mouth very feeble; eyelashes roughly indicated.

Colouring careful, warm, transparent and clean: heavy brushwork: cross-hatching. (The gilt band put on before the background was finished, and the slate-colour from it has in places been washed over the gilt).

Frontispiece, fig. 3.

C. Boy: Roman (?), in mummy; short chubby smiling face, eyebrows rather angular, and chin small. Body to l., face slightly to l. Shading on l. and under chin; high light down nose and on lips. Hair black and curly, well treated in individual curls, and edging of single curls round outline of head and forehead. Background nearly smooth stone-colour, leaving outline undefined. Yellow chiton with narrow purple stripe, and yellow himation over l. shoulder lighted with white.

Drawing fair, modelling of face well worked up, with good bold brushwork cross-hatched. Deep red tone. Outline of eyes and nose in reddish purple; eyelashes roughly shown in black. Drawing of drapery not bad in idea, but careless.

Around the face is a raised gilt band, with tendril and berries in relief.

Remelted, with thin layer of wax added.

Plate X., fig. 15.

WW. Man: Roman (?); angular eyebrows and nose; no chin. Body to front, face slightly to r., eyes to front. Shading slight on r. of face; high light only on eye and dress. Hair curly, black: slight scrubby black marks for moustache and beard. Background pinkish slate-colour, rough; for some reason hatched down r. of picture. Chiton white, curved at edge; purple stripe on l. shoulder; white himation over l. and under l. shoulder.

Drawing very bad, angular, symmetrical and flat; greyish tone; coarse dirty work. Outlines throughout in thin line of dark brown; same colour for eyeballs; eyelashes in black. Gilt wreath and thin gilt line between lips.

Remelted, with thin layer of wax added.

Plate X., fig. 18.

Gilt Wreath.

N. Young man with mummy: Greek; oval face, slightly angular chin and eyebrows; slight incipient down on lip and cheeks. Body to l., face nearly to front. Shading on l. of nose very slight, and under chin merely thin line; high light in faint colour down nose and on lip: white only used for light in eye and for drapery. Hair in single black lines, thickly laid on, good but rather mannered. Background brownish yellow, fairly smooth. Gilt wreath of olive in hair, very well managed; sketched in first in a thin yellowish outline. White drapery, hidden by mummy-case.

Drawing fair, but a little hard; careful cross-hatching, horizontal on face; entire flesh outlined with thin Indian red line. Deep reddish tone, rather flat; gilt line between lips; eyelashes stumped out. Most like mannered character of No. 7.

Frontispiece, fig. 4.

Ball Earrings.

OO. Lady: body slightly to r. face nearly *en face*, eyes *en face*, but pupils slightly to l. Shading down r. of nose and under lip and chin (as if the light was principally from above the head). Background bluish gray, very smooth. Wears hairband (gold, represented by ochre colour) with fringe of symmetrical curls over forehead; earrings, a cluster of berries hanging from ball; on neck a ring, hanging from red cord. Scarlet chiton with broad black stripe which is edged on both sides with gold, and black himation over l. shoulder. Over each shoulder, passing *under* the dress is a band of plaited material, probably perforated leather (old Egyptian dress ?): gilt jewellery laid on in heavy gilding. Hard high light down nose, nowhere else; on drapery high lights in blue; eyes staring and bad; a good deal of line work after finish, *e.g.* around hair, eyebrows and shading of nose. Neck much too small; whole effect bad.

Frontispiece, fig. 8.

TT. Girl: very much the same as No. OO.

Retouched.

DD. Lady: Graco-Egyptian, arched eyebrows, oval type. Body to l., face nearly to front. Shading slight down both sides of nose and under chin; high light slightly down nose and on chin. Hair in knob at back, and brought forward in rows of ringlets around forehead. Earrings in form of a large ball hanging from a smaller one: necklace, a close chain (badly drawn), with pendant of a crescent-formed ring. Chiton, and himation passing over l. shoulder. On one side of the base of the neck is inscribed on the background I C A, on the other P O Y C.

A good deal perished, but seems to have been good and careful drawing; the drapery is well arranged and clever, though not careful.

Frontispiece, fig. 6.

VV. Lady: Greek type, low forehead, eyebrows meeting; body three quarter to l., face slightly to l. Shading on l. side of nose and under chin, well treated. High light down nose, a dot in eyes, and on upper lip, jewellery, and chin; hair black, fringe of curls round face, and one coil at back. Background light grey, very smooth, run into the hair; earrings, a large ball hanging from a smaller one; necklace, a close chain (badly drawn) with pendant of crescent-form ring; purple chiton with stripe on r., edged with gold, and purple himation on l. shoulder.

Good drawing: pink tone; hair laid on in masses; Indian red outline to eyes and eyebrows, shaded edge of jewellery, back of neck, nose and line between lips; shading of drapery in this colour and black, with good effect. Jewellery in ochre; eyes too large; coarse brushwork.

Frontispiece, fig. 1.

Hoop Earrings.

K. Lady: nearly perished; Roman; eyebrows nearly meet, forehead low. Body slightly to r., face nearly to front. High light on forehead, nose, cheeks and chin. Hair black, bunched up in high knot behind, with two rows of curls around face. Background brownish. Earrings plain hoops: three necklaces, viz., above and below, a band of black red and white beads; between them a band of large black and red beads, alternating with gold reels. Chiton purple with broad blue stripe, edged with gold, on both shoulders.

Remelted, with thin layer of wax added.

jj. Young girl (much destroyed): short chubby face; eyebrows wide apart; face and body slightly to r. Shading on l. and under chin; high light on tip of nose and on jewels. Hair indistinguishable. Background slate-colour, fairly smooth, leaving clean outline. Earrings formed of a string of three pearls on a loop of gold (ochre): the upper necklace, of beryls (?): the lower, of pearls. Chiton seagreen, with a light in white and a purple stripe (?).

Drawing fair, colouring heavy: tone deep reddish. Drawing of drapery good. Outlines of eyes, chin, and r. side of cheek, in a dirty purplish colour.

Retouched.

JJ. Old Roman: short, straight, black hair, hooked nose,

wrinkled face, deepset eyes. Body slightly to l. ; eyes to l. ; lips slightly parted, eyebrows arched, squat face. Shading on l. and under chin. High light only down centre of face. Background warm slate-colour, smooth. Dress has perished.

Drawing excellent, a real character study. Red tone. On the hair and face the colour is massed very thick, but firm and good clean work. Outlines hardly traceable, in dark Indian red ; clean edge.

Remelted, with thin layer of wax.

Plate X., fig. 10.

AG. Lady : Greek (?) ; high forehead, triangular ; arched angular eyebrows, nearly meeting ; body to l., face slightly so. Shading in line on l. side of face, and under chin : high light in strong line down nose, and on lips. Hair black, in two coils around face, shaded into forehead. Background bluish, smooth, leaving a good outline. Earrings, three beads of white and red glass (?), on a ring : two necklaces of similar beads ; in the upper necklace the beads alternate with beryls. Chiton (blue stripe between edges of ochre for gold), and himation over l. shoulder, both purple with white lights.

Drawing of face fair, of drapery good, except the upper edge, which is hard ; warm reddish tone. Eyeballs brown, with a black line on upper lid, from which eyelashes are drawn. Outline of drapery shaded with a deeper purple colour.

Rewaxed.

L. Lady : Greek (?) ; oval face ; eyebrows slightly arched, and wide apart : body to r., face nearly to front. Shading on r., and below chin ; slight high light down nose and chin and on lips and jewellery, in yellow. Hair in long ringlets over face, with a bunch at the back stuck through obliquely with a gold pin. Background greenish yellow, smooth, leaving good outline. Earrings, a hoop on which are strung a beryl between two pearls : necklaces, (i.) (above), a chain drawn as two twisted strands of gold wire ; (ii.) a band of alternate large oblong beryls and diamond-shaped beads of gold : throughout the jewellery the gold is indicated in yellow. Purple chiton and himation around both shoulders.

Drawing good, very smooth clean colouring, well worked up : drapery fair ; reddish tone. Shading well managed. Eyelashes drawn in. Between the flesh and the background a line is left, showing the panel through.

Remelted, with thin layer of wax added.

H. Lady : Romano-Egyptian (?) ; eyebrows nearly meeting, eyes sloping inwards, long nose and face, thick lips. Body to r., face slightly so. Shading heavy on r. side of face and neck, strong high light down nose, and on lips and chin and jewellery. Hair in a coil high at back of head, from which ringlets brought forward around forehead : on it is set a gilt wreath. Earrings a cross-bar of gold to which a pearl is attached, with three pendent pearls hanging from the bar : necklaces, (i) above, a chain of alternate pearls and red stones ; (ii.) a gold chain badly drawn, with crescent-shaped (?) pendant. Purple chiton and himation passing over both shoulders.

Modelling good, but rather coarse and heavy ; thick cross-hatching on face and neck ; background a good deal destroyed.

Remelted, with thin layer of wax added.

Plate X., fig. 16 : *found with the preceding No. L.*

CC.* Young man : Roman (?) ; angular face, eyebrows, and nose ; no hair on face, but slight incipient moustache at angles of mouth in thin black strokes. Body to l., face slightly to r. Shading, very slight line on l. of nose, beneath chin and lips, and slightly on l. of face ; high light for eyes and a very thin line down nose. Hair thick bushy mass of black curls. Background quite smooth slate-colour, leaving clean outline. No drapery shown.

Drawing good and very careful, the modelling of the shoulders and neck is unusually studied ; but the whole effect is a little finnicking and weak, and wanting in boldness : warm deep red tone, rather flat. Outlines laid in in purple, with a thin deeper colour for outline of eyes, lower lashes, and between lips. Hair in thick masses of colour well worked up : the edge hairs lightly painted in.

Frontispiece, fig. 7.

AH.* Boy : Roman (?) : face rather square, hair short black, eyebrows arched and inclining downwards to nose. Body slightly to r., face full. Shading very slight down each side of nose (more on l.), and under chin. High light on tip of nose and upper lip. Background dark slate on l., yellowish on r., smooth, leaving outline around face. White chiton and himation.

Drawing careful, and modelling good ; eyes much too large, with rim round them in Indian red ; edge of drapery curved. Brushwork heavy, but not bad.

Remelted, with thin layer of wax added.

J. Lady : body slightly to r., face nearly *en face*, eyes *en face*, but pupils slightly to l. Shading under eyes, nose, and chin, and slightly on l. of nose : high light down nose and chin, and on earrings. Background fairly smooth, greenish slate-colour. Hair in rows of curls around face and two coils at back, with gold pin (coloured ochre) stuck through back obliquely from top r. corner. Earrings, hoop with three stones, a black stone between two pearls : necklace a plain chain, but too slightly drawn to admit of distinguishing details ; to this is suspended a green stone in gold medallion : below, a second necklace of alternate green stones and dull red stones set in gold, very roughly painted. Deep purple chiton with black stripe, and himation of same material over shoulder.

General drawing fair, but colouring careless, dirty and weak : best on dress, where there is a curious effect of transparency, caused by the cooling of the wax. Hair effect obtained by stumping out in semi-relief ; red upper outline to the white of the eye ; gamboge lines used in shading of neck and chin ; pinkish tone.

Remelted, with thin layer of wax added.

Plate X., fig. 12.

AA. Girl : body to r., face slightly to r., eyes *en face* : shading well handled and softened into a bluish background. High lights faint down nose, on lower lip, and on jewellery ; very small in eye. Chiton purple, and purple mantle over shoulders ; earrings, formed by gold hoop set with three emeralds : and two necklaces ; upper one bead and reel, of which the bead is gold, the reel of emerald or green glass ; the lower is of garnets strung on chain of gold, with a central emerald in gold with two pendent pearls. Hair parted in centre, taken back in wavy curls, deep reddish brown ; eyebrows a delicate black.

Work very careful and good, only spoiled by the hard line of the edge of the chiton ; otherwise, in the drapery, the light has been put in with good transparent effect.

Remelted, with thin layer of wax added.

Frontispiece, fig. 9.

T.* Youth : Greek, oval type ; eyebrows arched and turned up at inner ends ; body to r., face very slightly to r. Shading very slight down r. of face and under chin. High light not laid on, but left, down centre of forehead to chin. Hair shortish, with crisp curls, black. Background sage-green, very smooth and clean. Chiton almost same colour as background, with purple stripe on r. shoulder ; himation over both shoulders, of same colour.

Drawing excellent, everything sketchy except the face,

where pinkish tone, and careful bold brushwork, with cross-hatching. Hair in single black bold strokes, flat at edges, which were finished after the background was laid in. Outline of eyes, under brows and eyes, and along nose and lips a thin line of dull Indian red. Main lines of drapery in sage green slightly darker. Whole effect very transparent and good. Edge of chiton on breast v-shaped.

Plate X., fig. 17.

M.* Girl: Romano-Egyptian (?): squat chubby face, thick lips, long almond-shaped eyes. Body to r., face almost exactly to front. Shading, a thin line on r. of nose; strong high light on nose. Hair falls in long curls on shoulders.

Drawing mechanical; modelling of face worked in horizontal hatchings. Purple line around eyes, with a black line above it from which eyelashes are coarsely drawn. Too much perished to make out clearly.

Remelted, with thin layer of wax added.

S. Lady: Græco-Roman (?) type; straight eyebrows with large space between them, forehead triangular, all square and flat; face and body slightly to r., eyes nearly full. Shading under eyes (heavy), on r. side of face and chin; high lights (badly used) down nose and down centre of l. eye, and on jewellery. Hair black, parted in centre, massed around face and in a bunch high at back. Background pinky-white, very rough and coarse, obscuring outline on r. of face. Earrings two pearls hanging vertically, strung on a gold wire; necklace, green beryls, cut oblong, on a gold chain. Purple chiton (usual vertical stripe not shown); along the upper edge runs a black stripe, with a geometric pattern in yellow (gold) upon it; himation over l. shoulder also purple.

Drawing very careless; the l. shoulder is considerably higher than the r.; yellowish tone. Hair nearly perished, but seems bad; dirty, coarse work. Outline of eyes, nose and lips and drapery in dirty Indian red; shade cast by stones of necklace on neck in a light greenish colour; shade of himation down neck in the same colour; lights on drapery in background colour. Jewellery in ochre with white light. The work is clumsy and spiritless; the hair was by mistake brought down too low on each side, and has been corrected when the background was laid in over it.

Remelted, with thin layer of wax added.

Frontispiece, fig. 5.

Single Drop Earrings.

QQ. Lady: Greek; deep set eyes, oval face, arched brows far apart; straight nose; hair in long ringlets straight over brow, and perhaps in a knot at back. Body to r., face slightly so. Shadow on r., and under chin; high light faint down nose, and on part of forehead and chin.

Too much perished to make out clearly; seems careful good work, especially on face; jewellery not distinguishable. Pinkish tone.

Rewaxed.

GG. Greek type, oval face, arched eyebrows and low forehead; body to l., face slightly to l.; shading on l. of face, under lower lip and chin, and beside the r. fold of drapery; no high lights, except on jewellery. Hair black, parted down centre and massed in a single roll around face. Background greenish drab, rough, leaving a clear outline, but single strokes of it applied down l. side of face as a light. Earrings, a chain of three pendants; a pearl, with gold bead attached, hanging from a gold ring: two necklaces; upper, a string of beryls cut in oblong form, on a gold chain; lower, a chain, represented as two strands of twisted gold, carefully drawn; chiton white, purple himation folded in graceful folds around neck, so no stripe of chiton visible.

Very good drawing; warm brown tone; hair, bold masses of colour edged with single hairs in flat; outline of eyes and nose in soft Indian red; gold represented by ochre with lights of yellow; himation entirely in two shades of purple, used alternately as lights and shades; the background colour is used for the shade thrown by himation down r. shoulder. Careful clean brushwork.

Remelted, with thin layer of wax added.

Frontispiece, fig. 2.

Bar and Drop Earrings.

B. Lady: Roman (?); rather angular type, eyebrows nearly meet. Body to l., face very slightly so. Shading on l. of nose and face, deep under eyes and under chin. High light on forehead, down nose and chin, and on jewellery. Hair black, parted in centre, and arranged in two rolls around face; single edge hairs separately drawn in. Background whitish-drab, leaving outline fairly clear. Earrings, a single pearl from which hangs a horizontal bar of gold; from this hang two pearls, to each of which is attached a pyramid of three grains of gold. Necklace, a string of triple pendants; the gold is coloured ochre, with yellow lights. Chiton, ultramarine colour, with an edging at the top consisting of a purple line above a white line; it has a stripe on the r. shoulder, indigo colour, edged on both sides with gold (yellow). Himation over l. shoulder, same colour as chiton.

Baddish drawing, yellowish purple tone. Hair a black mass, not clearly defined, shaded into forehead, and with edge hairs simply drawn in. Eyelashes roughly laid in in black. Outline of eyes and nose in purple hard line. Four straight lines of shading on neck indicate wrinkles. Dirty colouring, drapery very bad.

Rewaxed.

Plate X., fig. 11.

X. Lady: Greek; arched brows far apart; hair in two rows of short curls round face, knob at back stuck through with a pin. The colour from the face and background is nearly gone. Earrings formed by a pearl from which two other pearls hang by a gold cross-bar: three necklaces, viz. (i.) at top, oblong beryls and gold beads alternately; (ii.) chain of red stones set in gold, with cylinder pendant; (iii.) diamond-shaped pieces of gold and beryls alternately. Purple chiton with stripe of deeper purple edged with gold, and himation over l. shoulder.

Good drawing; drapery well managed, edge of hair careful, and outline good. Warm tone. All the jewellery and the pin gilt.

PP. Lady: Greek; body half turned to l., face nearly to front. High light left on nose. Hair a tall frizzled mass of single curly strokes. Earrings, and two necklaces, but form indistinguishable. Purple chiton and himation with broad stripe edged with gold (ochre).

Face much perished. Good drawing, clean, smooth colouring; deep brownish-red tone.

Late.

A. Girl: Greek (in mummy); eyebrows slightly arched. Body and face turned very slightly to l.; shading slightly on l. side of nose and face and under chin; high light slight down nose and nearly in centre of lip. Hair nearly smooth black. Background dark brownish grey, nearly smooth, darker on r. side, lighter on shaded side of face. White chiton with narrow purple stripe, and white himation over l. shoulder.

Drawing very good, modelling excellent; the drapery is well arranged, and put in with a few clever touches in white; the hair is well shaded into the forehead; no edge hairs.

Brownish tone. Outlines of eyes, nose, and r. edges of drapery shaded in pinky red. Between the background and the face on the l. (shaded) side, a thin line is stumped out, forming a clean outline.

Remelted, with thin layer of wax added.

Plate X., fig. 14.

BB. Girl (in mummy): symmetrically *en face;* shading principally on neck; hair (black) in coils round face; earrings (*triglena*) pearls and gold; necklace of fifteen big pearls. Chiton purple; himation yellowish brown. Hair black, on which the coils and individual hairs are indicated by stumping with a sharp point (cestrum or handle of brush?); it seems to have a parting in the two lower coils. Background thick muddy greenish colour. Good modelling on face, which, however, is quite corpse-like, nearly white; partly spoiled by soaking of oil from the inside down the centre. The gold is not gilt, but coloured ochre.

AF. Man: Roman; hook nose, angular eyebrows nearly meeting, long face, pointed chin, slight moustache, beard, and whiskers; short curly hair, drawn in single lines. Body to r., face nearly to front. Shading a mere line down r. of nose, and the same used irrespectively for shading or as outline throughout. High light down nose and on lip only. Background warm, greenish grey, quite smooth. Chiton white, narrow purple stripe on l., and himation which has been white, on to which the red of the flesh-colour has run upon the l. shoulder.

Drawing flat, mannered, and angular. Tone deep brownish red. Drapery plain wash with a hard angular line for edge and fold. Black line over eyes, with lashes.

AJ.* Middle-aged man: thick lipped, square in face; Romano-Egyptian (?); body to l., head nearly *en face,* slightly to l. Shading on l. side of face and under chin; high light on nose, cheek bones, and temples; hair short and coarse; shaven chin and lip, bluish colour. Background dirty, bluish white, smooth, but badly laid on, obscuring outline of dress and r. of neck. White chiton with purple stripe on l. shoulder.

All the main lines laid in in coarse purple stroke, and very coarse brushwork on surface throughout; hair massed on. On the drapery white wax colour has run downwards; red tone.

Remelted, with thin layer of wax added.

Plate X., fig. 13.

R.* Young man: shoulders to l., head slightly to l.; in greenish white chiton with purple stripe on r. shoulder; white mantle passing from back of neck over shoulders. Background a darker dirty green; no pure colour. Hair of head reddish brown, thin moustache, and small peaked beard, in coarse black lines. High light down nose; purple line round eyes; eyebrows nearly meet, sloping downwards. Heavy brushwork; perpendicular thin style.

Rewaxed.

V.* Youth: Romano-Egyptian; symmetrical arched eyebrows, which nearly meet; hook nose, large almond eyes, pointed chin, thick lips. Body to l., face nearly to front. Shading, a line on l. cheek and under chin; high light straight down nose. Hair short-cropped. Background a greenish slate-colour, correcting outline, smooth. Chiton and himation white with bluish shading, narrow purple stripe on l. shoulder.

Drawing mechanical, hard, and flat; pinkish red tone. Hair merely a flat black wash, on which dashes of background colour; a pink dab on cheeks and chin; black line over eyes, no lashes; edge of drapery quite straight.

Remelted, with thin layer of wax added.

SS.* Lady: Egyptian (?); short squat smiling face, eyebrows and eyes sloping downwards towards nose, protruding lips, hair of wiry curly single locks nearly to shoulders. Body to r., face nearly to front. Shading in a narrow line on l. of nose and under chin. Background nearly white, fairly smooth. Earrings formed of a string of three pearls on a hoop of gold (coloured yellow), and necklace formed of large circles joined by small beads of gold, with a crescent pendant of gold (yellow). Chiton white with broad purple stripe; purple himation over l. shoulder.

Drawing fair. Drapery mechanical. Down the himation two stripes of black are stumped out with a zigzag line, done with a sharp point. Surface generally much injured.

Remelted, with thin layer of wax added.

O.* Girl: with long wavy hair down the back. Body to r., face nearly to front. Too much injured to make out clearly. Greenish chiton with dark blue stripe down each breast, and whitish himation over each shoulder.

Seems to have been fairly good, but too much is gone to make this clear.

Remelted, with thin layer of wax added.

U.* Man: Romano-Egyptian (?); eyebrows nearly meeting; eyes long, narrow, sloping downwards to nose; slight moustache, beard, and whiskers. Body to r., face slightly so. Shading a thin line on l. of nose and below chin; high light, strong line down nose. Hair a mass of thick curls, each indicated in a scrawling fashion. Background greenish yellow, cross-hatched smoothly, leaving clean outline. Chiton white with narrow stripe and lines of background colour; himation, same, over both shoulders.

Drawing very mannered, niggling, angular, and affected. Cross-hatching on face, purple wash for shade below eyes. Vermilion tone. Lips extremely thin and weak. Eyelashes coarsely indicated; eyeballs deep purple.

AE.* Man: Roman; bull-necked, thick-lipped, with stubbly beard and hair, thick lips and a small moustache; hair close-cropped, descending in a half circle over brow. Body to r., face nearly to front. Shading on r., and narrow purple outline everywhere. High light down nose, and on lip and chin. Hair smooth wash, with edge hairs drawn in black. Background mauve, smooth. White chiton and himation, with narrow stripe.

Drawing of face good, drapery poor; deep brown tone. Horizontal hatching on face.

Rewaxed.

CHAPTER VII.

ON THE VEGETABLE REMAINS DISCOVERED IN THE CEMETERY OF HAWARA.*

By Percy E. Newberry.

57. Since the close of the last century, when Egypt was in a great measure rediscovered by the French savants attached to Bonaparte's Egyptian expedition, many interesting discoveries of ancient vegetable remains in the tombs and cemeteries of the ancient Egyptians have been made.

* This paper was read before the Biological Section of the British Association, at the Bath meeting, 1888, and an abstract of it is published in the *Proceedings.* The author must express his acknowledgments to Mr Jackson, Mr Carruthers, Mr Holmes, Prof. Crepan, and especially to Mr Thiselton Dyer and Prof. Oliver for their kind and most valuable assistance.

The earliest of these discoveries was that made by Ehrenberg in 1820. This distinguished naturalist, who was attached to the exploring party under the command of Minutoli, made a large collection of fruits and seeds from the ancient tombs; but, as he himself remarks in a letter still extant, "the fresh appearance of these seeds, and in several cases their still existing characteristic taste and smell, makes their ancient origin highly suspicious." The scientific value of this discovery was therefore lost. Three years later, Passalacqua made considerable collections of seeds, leaves, and fruits from the ancient tombs in the Necropolis of Thebes, and these vegetable remains were carefully examined by Prof. Kunth in 1826. They were all more or less carbonised, but he succeeded in determining some twenty species, and he published the results of his investigations on them in the eighth volume of the *Annales des Science Naturelles* (p. 418–423). Several years later, in 1859, Franz Unger, Professor of Botany in the University of Vienna, published a paper on "the Plants of the Ancient Egyptians" in the *Sitzungsberichte der Kaiserlichen Akademie der Wissenschaften in Wien (Math. Naturw.* Classe xxxviii. Bd. s. 69–140); and in this paper he gave identifications of some plant remains which had been discovered in the ancient tombs, and which were preserved in the Egyptian Museum at Vienna. Two years later, in 1861, Unger examined a number of organic fragments which he had found in some of the unburned clay-bricks of which many of the ancient Egyptian monumental buildings are constructed, and in the following year he published the results of his investigations in the proceedings of the before-mentioned society (L. c. xlv. 2 Abth. s. 75–88; liv. Abth. 1. s. 33–62; lv. 1 Abth. s. 198–205). From the fragments of plants found in these mud-bricks he determined twenty-four species of plants, most, of course, from very imperfect materials, and necessarily with some hesitation as to the accuracy of their determination. He, however, by this means, established the fact of the cultivation of *Eragrostis abyssinica*, LK., in ancient Egypt, which has not yet been otherwise proved. In 1871, the celebrated German naturalist, Alexander Braun, was led to examine the vegetable remains preserved in the Berlin Egyptian Museum, from the surprising discoveries of Prof. Oswald Heer, of Zurich, and the results which that naturalist had arrived at in examining the ancient vegetable remains of the Swiss lake-dwellings. The results of Braun's investigations were published from his MSS., after his death, by Ascherson and Magnus, in the ninth volume of the *Zeitschrift für Ethnologie* (1877, s. 290–312); an English translation of this may be found in the *Journal of Botany* for January, February, and March, 1879. In 1881, Emil Brugsch-Bey discovered a quantity of vegetable remains in the great vault of Pinet'em, a king of the XXth dynasty, containing the series of royal mummies, at Deir-el-Bahari. These remains consisted for the most part of flowers and leaves, bound together and made into garlands. They were all carefully examined by the Egyptian explorer, Dr. Schweinfurth, and have been fully described by him in a paper contributed to the Egyptian Institute at Cairo (*Bulletin de l'Institut Egyptien*). Later, in 1886, M. Maspero, whilst exploring the cemetery of Dra-Abu'n-Negga, made considerable collections of ancient vegetable remains. These were also examined by Dr Schweinfurth, and though the specimens were often in bad preservation, he was able to recognise some fifty species. He published the results of his examination of these remains in *Engler's Botanische Jahrbücher* (viii. Bd.).

In September, 1886, it will be remembered, Mr Carruthers, in his presidential address to this section, briefly alluded to the results arrived at by the examination of the ancient vegetable remains, and pointed out their bearing on certain theoretical views entertained at the present day. "In none of these species," he said, "except in some vine leaves which Dr Schweinfurth had discovered, and of which he has made a careful study, has he been able to detect any peculiarities in the living plants which are absent in those obtained from the tombs."

58. Since then, however, a quantity of new material for the comparison of former Egyptian vegetation of a known age with that of our own day has been brought to light. In the spring of the present year, whilst Mr Flinders Petrie was exploring the hitherto untouched cemetery of Hawara, in the Fayum province of Lower Egypt, he found a number of funeral wreaths, and a large quantity of fruits, seeds, and leaves, which in all probability were the remains of the offerings made to the dead and of the funeral repasts of the Egyptians. Although these remains were found merely covered with dust and sand, they have been preserved with scarcely any change, and therefore permit of the closest examination and comparison with their existing representatives. Many of the most delicate flowers, indeed, have been preserved without sustaining the slightest damage. The roses, for instance, had evidently been picked in an unopened condition, so as to prevent the petals from falling. In drying in the coffin, the petals had shrivelled and shrunk up into a ball, and when moistened in warm water and opened,

the andrœcium appears before the eye in a wonderful state of preservation. Not a stamen, not an anther is wanting—one might almost say that not a pollen grain is missing. When taken from out of the sand and dust of the cemetery, the vegetable remains were very dry and brittle, and in that state it was quite impossible to examine them. They were therefore soaked in cold, lukewarm, or hot water (according to the species), when they soon recovered their original flexibility, and permitted of being handled and examined with ease. By this means it was possible to prepare a series of specimens gathered two thousand years ago, which are as satisfactory for the purposes of science as any collected at the present day. The brittleness of the specimens was only due to the extreme state of dryness they had attained in the nineteen or twenty centuries during which they had lain in the tombs. This dryness was, doubtless, also the principal factor in their wonderful preservation.

The examination of these remains of the vegetation of ancient Egypt has, in a twofold way, a most important bearing on botanical science. Firstly, it throws some light on the question whether the species of plants have undergone any perceptible change in historic times. Secondly, it has an important bearing on several questions connected with the former geographical distribution of plants.

59. The results of Dr Braun's examination of the Berlin collection had shown some extraordinary differences in the distribution of several species. In Mr Petrie's collection many fresh instances occur. In Egypt at the present day are found, cultivated or naturalised, many plants, no traces of the existence of which in ancient times can be proved. On the other hand, there existed in ancient Egypt many plants which have now vanished from the region of the Upper Nile. Of course it should be remarked that among the plants of the ancient Egyptian tombs a few appear to have reached Egypt by means of trade, and not to have been products of the land, as Braun has shown was most probably the case with the fruits of *Sapindus emarginatus*, Vahl.; yet this is probably not the case with the majority of species. The most widely distributed fruit trees at the present day in Egypt are, as Dr Schweinfurth has shown,* the date-palm, the sycamore fig, and the *Zizyphus Spina-Christi*, Willd. In the gardens there are now grown † true oranges and mandarins, Arabian lemons, citrons, vines, jujubes, tamarinds, cassia, peaches, almonds, cherries, apricots, pears, apples, quinces, pomegranates, olives, black and white mulberries (*Morus nigra* and *M. alba*), bananas, cucumbers, melons, and water-melons. Of these there had been proved to have existed in ancient Egypt only the date-palm, the sycamore, with the true fig, vine, pomegranate, and water-melon. To these Mr Petrie's collection permits us to add the peach, cucumber, and melon, the sebestens (*Cordia Myxa*, L., the *moukheyt* of the Arabs), the olive, and the walnut. Among the plants of ancient Egypt which have now perished, the *Papyrus* and *Nelumbium* have often been quoted, though until now this latter species had not been authenticated by specimens from the ancient tombs. To these two specimens may now be added (1) a cruciferous plant, *Matthiola librator*, L. (several flowers of which were found in a wreath from the Hawara cemetery); (2) a rose (*Rosa sancta*, Richards), now confined, according to Prof. Crepan, to Abyssinia; (3) a species of Pyrus (*P. domestica*, L.), also now found in Abyssinia; (4) a cornflower (*Centaurea depressa*, M. Bieb.), which is now found only in Asia Minor and the neighbouring countries; (5) a juniper (*Juniperus phœnicia*, L.), not now known in Egypt, but distributed throughout the whole Mediterranean region; (6) a variety of the common olive (*Olea europea*, v. *nubica*, Schwnf.), now confined to Abyssinia, but which, in former times, would appear to have been more widely distributed; (7) a species of Mimusops (*M. Schimperi*, Hochst.), which is now only met with, according to Dr Schweinfurth, "in Central Africa, especially in Abyssinia;" and (8) a species of Elæocarpus (*E. serratus*, L.), which only now occurs in Southern India and Ceylon. Only the stones of the fruits of this latter plant were found; and these, of course, may have been imported along with the other commercial products of India and Ceylon, which are known to have been introduced at a much earlier period than that to which these vegetable remains belong. It is difficult to say, however, for what purpose these fruits would have been introduced; it could hardly have been for eating purposes, as the fleshy pulp of the fruit is intolerably sour.

60. Several species of plants, however, which have been identified among these ancient remains were undoubtedly introduced into Egypt either for (1) economic purposes, or (2) for the beauty of their flowers, which were either used for personal decoration, for making funeral wreaths, or were esteemed for their aromatic odour.

I. Of those introduced for economic purposes, perhaps the most important are the leguminous plants

* *Sur la Flora des Anciens Jardins Arabes d'Egypt*, in *Bulletin de l'Institut Egyptien*, année 1887.
† Ibid.

which, with one exception, point to Asia Minor, Armenia, and the neighbouring countries as the place of their origin. These are :—

(1) The Chick Pea (*Cicer arietinum*, L.). The discovery of remains (flowers, pods, and seeds) of this plant is interesting, as it was not before known to have been cultivated in ancient times; it is also one of those species of cultivated plants the origin of which is not known. Fourteen other species of *Cicer*, however, are recorded, and these are all natives of Greece or of Western Asia. It seems therefore most probable, as Alph. de Candolle has pointed out, that the cultivated plant comes from the tract of land lying between Greece and the Himalayas. The species *C. arietinum* is given in all the floras of the south of Europe, Egypt, and Western Asia as far as the Caucasus and India, as a cultivated species or as growing in fields and cultivated grounds. It has also been indicated in the Crimea and to the south of the Caucasus as nearly wild. This quasi-wildness can only point to its origin in Armenia, Mesopotamia, and the neighbouring countries. The dimensions of the pods and seeds are smaller than those at present cultivated in Egypt; in all other respects the ancient specimens are identical with the modern ones.

(2) The Bean (*Vicia Faba*, L.). Only one seed of this species was found. The dimensions of this bean are, in length, 8 mm., in breadth, 6 mm.; this is smaller than the variety at present cultivated. This species also points to Asia Minor as the place of its origin.

(3) The Lentil (*Lens esculenta*, Mœnch.). A quantity of the seeds of this [illegible] were found. These also are smaller than of the variety now cultivated in Egypt. The ancient specimens average 4 mm. in diameter; the recent ones average 4½ mm. The floras of Southern Europe, of Northern Africa, etc., always mention this species as cultivated, or as growing in fields after or with cultivated plants. All the other species of this group belong to the Mediterranean basin or to Western Asia. From this fact, Alph. de Candolle considers that it "existed in prehistoric times in Western temperate Asia and Greece," and that it was "in these countries that its cultivation was first undertaken in prehistoric times." This plant must have been introduced into Egypt at a very early period, for Dr Schweinfurth has found a mess of it amongst the funeral offerings in a vault at Dra-Abu'n-Negga, of the XIIth dynasty (2200-2400 B.C.)

(4 and 5.) Two species of Pea, *Pisum sativum*, L., and *P. arvense*, L. Only three specimens of the former species were found. The dimensions of these are 4, 3·6, and 3·5 mm. in diameter respectively. Of the latter species five specimens were found. The dimensions of these are 3, 2·9, (two) 2·8, 2·7 mm. respectively. These dimensions are much inferior to those of the modern cultivated kinds.

Of cereals we have in this collection three kinds—

(1) Wheat (*Triticum vulgare*, L.).

(2) Barley (*Hordeum vulgare*, L.).

(3) A species of oat (*Avena strigosa*, Schreb.).

The grains of wheat and barley are quite equal in size to the average grains grown in Egypt at the present day. Several ears of barley were also found, and these do not differ in the slightest degree from modern specimens. Only seven grains of the oat were found, and it is doubtful whether these seeds were the produce of cultivated plants or of weeds growing in the cornfield. None of the Greek or Roman botanical writers mention the plant as having been cultivated: they, however, knew the plant—the βρόμος of the Greeks, the *avena* of the Romans—but, it would appear from classical authors, only as a weed growing in the cornfields.* It might, however, have been cultivated in Asia Minor in ancient times, for Galen (*De Alimentis*, i. 12) mentions that oats were abundant in Mysia above Pergamus, that they were given to horses, and that men used them for food in years of scarcity. None of the seeds found by Mr Petrie exceed 1 cm. in length, whereas the seeds of the modern cultivated species generally exceed 1·5 cm., often, indeed, reaching 2 cm. in length. From this circumstance it is probable that the ancient seeds were the produce of weeds growing in the cornfield. [illegible] This species still exists in Egypt in deserted fields, but it is uncertain whether it is indigenous. According to Alph. de Candolle it has not been found undoubtedly wild, and is only met with in the cultivated state or in cornfields as a weed mixed with cereals.

The impurities found among the cereals are interesting. They are—

(1) Two seeds of *Medicago denticulata*, Willd.

(2) One seed of *Galium tricorne*, With.

(3) Six seeds of *Torilis infesta*, L.

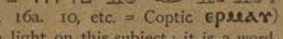
(4) One seed of *Centaurea depressa*, M. Bieb.

The presence of the first three of these seeds shows that the tillers of the soil in the Græco-Roman period were troubled with the same weeds which now infest the cornfields of Egypt. The occurrence of the seed of *Centaurea depressa*, however, is of much greater interest, as this species is not now found in Egypt, or, indeed, in any of the contiguous countries, though it occurs as a cornfield weed in Asia Minor, Mesopotamia, and Armenia. The achene is light

* See Lenz, *Bot. der Alten*, p. 243.

in colour, shining, slightly compressed laterally and oblong ovoid in shape. The areole encloses half the length of the achene; and the base, unlike the base of those found by M. Maspero in tombs of the XXth dynasty, is quite naked, as in recent specimens from Asia Minor. The intermediate bristles of the pappus are nearly one-fourth longer than the achene, the inner ones half as long. The occurrence of this plant among the wheat indicates the way by which wheat had come into the hands of the Egyptians; and this, in a way, confirms the supposition of Alph. de Candolle that wheat was aboriginal in Mesopotamia and the contiguous countries, and that it was from thence that it spread over the surrounding countries. (See also on this subject an interesting paper by Prof. Terrien de Lacouperie, in the *Babylonian and Oriental Record*, vol. iii.; and cp. the statement of the Chaldean historian Berosus, in *Fragments*, i., ed. Lenormant: *Essai de Commentaire des fragments cosmogoniques de Berose*, p. 6. Paris, 1872.)

61. Of the other plants in this collection, which were introduced into Egypt from foreign countries, and cultivated for economic purposes, are: (1) flax (*Linum humile*, Mill.); (2 and 3) the vine and currant (*Vitis vinifera*, L. and var. *corinthiaca*, L.); (4) the Egyptian clover (*Trifolium alexandrinum*, L.); (5) the peach (*Prunus persica*, Bth. and Hook.); (6) the henna (*Lawsonia inermis*, Lamk.); (7) the pomegranate (*Punica granatum*, L.); (8) the walnut (*Juglans* [illegible]); and (9) the castor-oil plant (*Ricinus communis*, L.). Among these plants the flax deserves special consideration. Only four capsules of this *Linum* were found. The lengths of these capsules are 7·5, (2) 7·4 and 7·32 mm.; the breadths are 6·4, 6·32, 6·3 and 6·2 mm. respectively. None of the seeds reach 5 mm. in length. These dimensions are inferior to the average size of the capsules and seeds of the same species now cultivated. The capsules are recognised as belonging to the species *L. humile*, from the fact that long white weak hairs occur on the inside of the partitions. The proportionate size of the seed, which is much narrowed upwards, also proves that the ancient specimens belong to this species. The ancient seeds still present their original brown glossy polished surface, and under a lens the extremely fine pits which mark the surface may be distinctly traced. This species is still cultivated in Egypt and Abyssinia. The finding of a bundle of Egyptian clover carefully tied round with a strip of papyrus pith is also of great interest, as this species was not before known to have been cultivated in ancient times. The plant is a native of Asia Minor, and must have been introduced into Egypt at an early period. It is now only cultivated in Egypt in fields about Cairo. A curious coincidence in ancient and modern clover cultivation is the presence on the ancient specimens of numerous plants of the Arabian Dodder (*Cuscuta arabica*, L.), which is still the commonest and most flourishing weed in every clover-field in Egypt. A careful comparison of the two species show that they differ in no respect from modern specimens. A large quantity of peach-stones were also found. The dimensions of these stones are much smaller than those of modern cultivated kinds. The original habitat of the peach tree is very doubtful. De Candolle considers that it came from China, and gives several facts which point to this conclusion. It was, however, at an early period growing in abundance in Media and Persia (Theop. *N. H.*, iv. 4. 2., vii. 13. 7). From Persia it was introduced to Egypt, and from there taken to Italy and the Mediterranean countries (*Pliny*, xv. 13). The henna (several twigs of which were found) was introduced into Egypt at a very early period. The large usage made of this plant, and the extent to which it has been cultivated by the peoples of the Orient, has effaced all traces of its original habitat. The henna has often been found in a state of perfect naturalisation in different regions of the ancient world; but no traveller has observed it as growing entirely wild. Emin Pacha, however, has lately indicated the shrub as "spontaneous" in the mountains of Latouka, to the east of the Nile Superior, about 4° N. of the Equator. If this is the original habitat of the henna, the plant would appear to have been introduced into Egypt, like so many others, through Abyssinia. Three small unripe fruits of the pomegranate were also found, and these are of great interest. On cutting one of these across, it was found to contain only four cells, whereas the modern cultivated kinds have usually 6–8 cells. The fruits were very shrivelled, but on placing a piece of the peel in boiling water it soon recovered its original flexibility. A microscopical examination of the peel shows the large thin-walled cells, among which occur the thick-walled cells and fibro-vascular bundles. No starch granules were detected, but throughout the tissue occur crystals of oxalate of calcium. The tree is indigenous to N.W. India and the countries S. and S.W. of the Caspian, to the Persian Gulf, and Palestine. From the latter country it was probably introduced into Egypt. The comparatively rare mention of the tree in the earlier hieroglyphic inscriptions would lead us to believe that it was not generally cultivated in Egypt in the most ancient times. At

the time of the XVIIIth dynasty, however, it was generally cultivated in Egypt; indeed, we find the Israelites speak indirectly of Egypt as "a land of figs, vines, and pomegranates" (Num. xx. 5). At an early period the tree abounded in Palestine, which is clearly indicated from the fact that cities and districts received their names from it. (See Num. xiii. 23; Deut. viii. 8; 1 Sam. xiv. 2; Joel i. 12; Hagg. ii. 10; Cant. iv. 3; vii. 12, etc.; comp. also Niebuhr. *Beschreibung*, etc., p. 148). The ancient Egyptian name of the pomegranate *an ha men* (also sometimes spelt  Papy. Harris I. 16a. 10, etc. = Coptic ϵρμαν) also throws some light on this subject; it is a word, not of Egyptian, but of Aramaic origin. It is interesting to note that the peel of the fruit was recognised as medicinal by the ancient Egyptians. It is often noted in the Ebers Papyrus (see pl. xvi. 16, etc.).

Two seeds of the Castor-oil (*Ricinus communis*, L.) also occur in Mr Petrie's collection. On these two seeds the brownish bands and spots with which the shining grey epidermis is marked may still be clearly made out. The seeds, which are of a compressed ellipsoid form, are 13·2 mm. in length, and 8 mm. in breadth. They were gathered, however, when not quite ripe, for on one of them being cut open and microscopically examined, there was found a row of encrusted, almost colourless cells deposited in a radial direction on the testa. In mature seeds, Gris long ago pointed out (*Ann. d. Sc. Nat.*, xv. 1861, 5-9), this layer of cells is not perceptible, and therefore appears to perish as the seed ripens. This plant is a native of India, and must have been introduced, at an early period, into Egypt. It was chiefly cultivated by the Egyptians for its oil, and is often alluded to by old authors (the κικι of Herodotus, ii. 94, Strabo, etc.; the *Tekem* of the Egyptians, see *Ztschr. für Ägypt. Sprache*, 1879, p. 92, and *Revue Egyptologique*, 1884, p. 119). It was also esteemed for its medicinal properties, as is shown by a "Catalogue of its uses" in the Ebers Papyrus (f. 47).

62. II. Of the plants which were introduced into, and cultivated in, Egypt, for the beauty of their flowers or for their aromatic odour, the following are represented in this collection: (1) the *Lychnis cœlirosa*, L.; (2) the myrtle (*Myrtus communis*, L.); (3) a species of Immortelle (*Gnaphalium luteo-album*, L.); (4) the woody nightshade (*Solanum dulcamara*, L.); (5) the sweet marjoram (*Origanum Majorana*, L.); (6) the *Celosia argentea*, L.; (7) the bay laurel (*Laurus nobilis*, L.); and (8) the polyanthus narcissus (*Narcissus Tazetta*, L.). The first of these plants was one of the favourite "garland-plants" of the Greeks. It is often mentioned by the early poets (see *Athen.* xv. 27-31), and was, according to Theophrastus, cultivated for its flowers. It is not a native of Egypt, but was in all probability introduced from Cyprus or from Greece, where it still grows wild in abundance. In ancient times it was found in the "greatest perfection in Cyprus and Lemnos, and also in Stromboli and near Mount Eryx and at Cythera" (*Athen.* xv. 29). The myrtle was another plant much used by the ancients in wreath-making. Several twigs, with the leaves still attached, are in Mr Petrie's collection. The leaves still retain their aromatic odour, and it is interesting to note that Pliny mentions the myrtle of Egypt as the "most odoriferous" (*N. H.*, xv. 29). The tree is a native of the temperate parts of Western Asia, and was probably, at an early period, introduced from thence into Egypt. Several wreaths, composed entirely of flowers of the *Gnaphalium luteo-album*, were found in the Hawara cemetery. This species has generally been considered as a native of Egypt, but this is doubtful. Dr Schweinfürth mentions that it "follows the black earth of culture," and that it "generally haunts the temporarily established habitations of the Bedouins" (*Sur la Flora des Anciens Jardins Arabes d'Egypte*. Appendix, note 2). It is rarely met with in Egypt. On the other hand, it grows wild, in great profusion, in Asia Minor. The berries of the woody nightshade were largely used in the wreaths, and must have added much to the general effect by their brilliant hue. They were generally threaded on thin strips of the leaves of the date-palm, the ends of which were turned down and fastened into the wreaths. Pliny mentions that these berries "were used in Egypt for chaplets." This plant was undoubtedly introduced from Greece. Three wreaths composed of twigs of the sweet marjoram were also found. These twigs are in a wonderful state of preservation, although they have lost all trace of their aromatic odour. A microscopical examination of the ovate greyish-green leaves, covered on both sides with thin down, show that this species existed in exactly the same form two thousand years ago as it does now. The plant is a native of Greece, and was introduced into Egypt from thence. The flowers of the polyanthus narcissus are also in a wonderful state of preservation, and do not differ in the smallest degree from modern specimens. This plant was probably introduced from Palestine, where it now occurs in great abundance.

82098

63. Beside these vegetable remains, the following were also found in the cemetery of Hawara: a fragment of a flower of *Nymphæa cærulea*, Sav.; a quantity of capsules of *Zilla myagroides*, Forsk.; a fragment of a twig of the Nile tamarisk (*Tamarix nilotica*, Ehrenb.); two flowers and a quantity of pods of the Nile acacia (*A. arabica*, Willd.); several flowers of the common willow-herb (*Epilobium hirsutum*, L.); three seeds of the cucumber (*Cucumis sativus*, L.); a flower of the melon (*C. Melo*, L.); a capsule of coriander (*Coriandrum sativum*, L.); two olive stones (*Olea europea*, L.); a fragment of a plant of the common Egyptian dock (*Rumex dentatus*, L.); a large quantity of dates and date-stones, and several wreaths composed of flowers of the date-palm (*Phœnix dactylifera*, L.), strung on threads of twine; two fruits of the doom-palm (*Hyphæne thebaica*, Mart.); a neatly tied-up bunch of the inflorescence of *Imperata cylindrica*, L.; several portions of the inflorescence of the Egyptian sugar-cane (*Saccharum egypticum*, L.); several fragments of the plants of *Scirpus maritimus*, L.; and a quantity of twigs of *Juniperus phœnicia*, L., to which, in a few cases, the berries were still attached. The specimens of these last three species were all taken from the interior of crocodile mummies, of which they formed the principal stuffing. A careful comparison of all these specimens with modern ones, shows that they differ in no respect from modern plants of the same species, now growing in Egypt.

64. Many interesting facts relating to the ancient flora of Egypt are also to be gleaned from the manufactured objects found in the cemetery; as, for instance, the textile fabrics, basket-work, and wooden objects of various kinds.

An examination of the fibres of the textile fabrics shows that they are always composed of linen. Ascherson has examined the fibres of a quantity of ancient Egyptian mummy cloths, and has come to the same conclusion (see *Verhandlungen der Berliner Anthropologischen Gesellschaft*, 1875, p. 58).

Two species of a grass were used in the manufacture of basket-work. Baskets were also made of plaited date-palm leaves, as also were mats. The rope used in Græco-Roman times was chiefly made of date-palm fibre, though hempen fibre was sometimes used. The children's toys and small wooden images were generally made of sycamore, the commonest Egyptian wood. Cedar was used for the panel pictures, and was probably imported from the Lebanon district of Palestine. The coffins were generally made of sycamore wood, but the wood of a species of pine (probably *Pinus pinea*, L.) was also used. This latter was probably imported from Greece, Asia Minor, or Syria. But perhaps the most interesting of the manufactured objects are the pair of cork soles. Now cork, it is well known, is the product of *Quercus suber*, L., and this tree is a native of the south of Europe, and is especially abundant in Southern Spain, from which country it has been, from time immemorial, largely exported. This pair of cork soles found among other objects in the Hawara cemetery point to the commercial relations that existed in early times between Egypt and Spain.

65. Taken as a whole, this collection of ancient plant-remains throws some light on the solution of the question whether the species of plants have undergone any perceptible change in historic time. With respect to the wild plants, the question must be answered in the negative. The most careful investigation of them shows a surprising agreement with the recent species, and even small varieties of form have in many instances been retained.

But the case is different with the cultivated plants; although some kinds—wheat and barley—have undergone no perceptible change, yet most of them do not agree in minute details with recent forms. The oats, the flax, the currants, the beans, the peas, the lentils, the peach-stones, etc., can be at once distinguished from modern cultivated kinds, as they are for the most part characterised by smaller seeds. Some variations from the present forms, as has been pointed out, are also observable in the fruits of *Punica granatum*.

If all the ancient plant remains that have been discovered in the tombs of the ancient Egyptians are taken into consideration, the flora of ancient Egypt announces to us, like that of the lake-dwellings, that all the plants which come in contact with man become changed up to a certain point, and thus man participates in the great transformations of nature; while the wild plants which surround us at the present day still grow in the same forms as they did two or three thousand years ago, and do not exhibit the smallest change.

66. The following is a complete list of the vegetable remains found by Mr Flinders Petrie in the cemetery of Hawara. Those marked with an asterisk have before been authenticated by specimens from the ancient tombs.

* Nymphæa cœrulea, Sav.
Nelumbium speciosum, Willd.
Matthiola librator, L.

Zilla myagroides, Forsk.
Lychnis cœli-rosa, L.
* Tamarix nilotica, Ehrenb.
Hibiscus (sp. ?).
Elæocarpus serratus, L.
* Linum humile, Mill.
Balsamodendron myrrha, Nees. (resin).†
* Vitis vinifera, L.
,, v. corinthiaca, L.
* Medicago denticulata, Willd.
Trifolium alexandrinum, L.
Cicer arietinum, L.
* Vicia Faba, L.
* Lens esculenta, Mœnch.
Pisum sativum, L.
,, arvense, L.
* Acacia arabica, Willd.
Rosa sancta, Richards.
Pyrus domestica, L.
Prunus persica, Bth. and Hook.
Myrtus communis, L.
* Lawsonia inermis, Lamk.
* Punica granatum, L.
* Epilobium hirsutum, L.
Cucumis sativus, L.
,, Melo, L.
* Lagenaria vulgaris, Ser.
Galium tricorne, With.
* Coriandrum sativum, L.
Torilis infesta, L.
* Chrysanthemum coronarium, L.
* Centaurea depressa, M. Bieb.
Gnaphalium luteo-album, L.
* Mimusops Schimperi, Hochst.
Styrax Benzoin, Dry. (resin).†
* Olea europea, L.
,, v. nubica, Schwnf.
Cordia Myxa, L.
Cuscuta arabica, L.
Solanum dulcamara, L.
Origanum Majorana, L.
Celosia argentea, L.
* Rumex dentatus, L.
Laurus nobilis, L.
* Ficus Sycomorus, L.
Juglans regia, L.
Quercus suber, L. (cork).
* Juniperus phœnicia, L.
* Pinus pinea, L.
Narcissus Tazetta, L.
* Phœnix dactylifera, L.
* Hyphæne thebaica, Mart.
* Cyperus papyrus, L.
Scirpus maritimus, L.
Imperata cylindrica, L.
Saccharum ægypticum, Willd.
Avena strigosa, Schreb.
* Triticum vulgare, L.
* Hordeum vulgare, L.

The following is a list of the plants previously authenticated by specimens from the ancient Egyptian tombs, but which have not been found among the vegetable remains discovered at Hawara.

† See *Pharmaceutical Journal*, vol. xix., p. 387, 399.

Delphinium orientale, Gay.
Cocculus Leæba, DC.
Nymphæa lotus, Hook.
Papaver Rhœas, L.
Sinapis arvensis, L., var. Allionii, Jacq.
Mærua uniflora, Vahl.
Oncoba spinosa, Forsk.
Alcea ficifolia, L.
Linum angustifolium, Huds.
Balanites ægyptiaca, Del.
Moringa aptera, Gaertn.
Sesbania ægyptiaca, Pers.
Lathyrus sativus, L.
Cajanus indicus, L.
Citrullus vulgaris, Schrad., var. colocynthoides Schwnf.
Apium graveolens, L.
Ceruana pratensis, Forsk.
Sphæranthus suaveolens, DC.
Carthamus tinctorius, L.
Picris coronopifolia, Asch.
Jasminum Sambac, L.
Mentha piperita, L.
Ficus Carica, L.
Salix safsaf, Forsk.
Allium sativum, L.
Allium cepa, L.
Calamus fasciculatus, Roxb.
Medemia Argun, P. G. von Würtemb.
Cyperus esculentus, L.
Andropogon laniger, Desf.
Leptochloa bipinnata, Retz.
Eragrostis abyssinica, LK.
Parmelia furfuracea, Ach.
Usnea plicata, Hoffm.

NOTE.—The writer of this paper has received many letters, and has often been asked, whether there is any truth in the statement that seeds taken from the ancient tombs had been caused to germinate. It may here be pointed out that this statement was long ago refuted on the ground of intentional deceit on the part of the gardener entrusted with the cultivation (see *Journ. Bot.*, Jan., 1879). Nevertheless, owing to frequent requests, a series of experiments have been tried on the seeds found in the Hawara cemetery. The seeds have been planted under as favourable circumstances as possible, but, as yet, the experiments have resulted in absolute failure.

CHAPTER VIII.

BIAHMU.

67. When, six years ago, I visited the two so-called pyramids of Biahmu, about four miles north of Medinet el Fayum, I concluded from their appearance that it was very unlikely that they had really been pyramids, but rather that they were courts surrounding two great pedestals on which statues had stood. This

result agreed nearly with the description of Herodotos, of two pyramids rising out of the water, each bearing a stone statue seated on a throne. His idea that they were large pyramids half submerged was easily to be explained by the fact of his visiting the province during the inundation, and his viewing them from Arsinoe, and not going down to Biahmu. The Arab name, *Kursi Faraun*, or "throne of Pharaoh," accords also with this idea; they are, however, more usually known as *es sanam*, the "high places" or "high things." Such was the state of the question when I went to the Fayum this year, and I much wished to settle the matter by excavating. Happily two days almost sufficed, and after a week there was scarcely any point of doubt remaining.

The general arrangement of the structures will be seen on referring to the restoration in Pl. xxvi. The various evidences that were discovered for the form here drawn, will be best understood if we consider the different parts of the structure, and state the proofs that exist for the present restoration. This drawing only gives the plan and elevation of one structure; at 200 feet distance on one side is a similar building facing the same way; while between these the road from the lake leads up to the capital, Arsinoe. Hence it appears that these two colossi were placed as guarding the approach to the province from the lake, like the colossi on either side of the approach to a temple, and probably at the projecting corner of the reclaimed district.

68. The evidence about the courtyards is as follows:—

Courtyard with wall around. Remains of wall, and a clear space around each pedestal; the pedestal having finished dressed faces on all sides, and therefore not part of a larger mass.

Foundations. Drawn as uncovered on all sides.

Wall joins back of pedestal. There is no sign of wall or foundation further south; it is improbable that there was a small space between the wall and the pedestal; and the existing remains of the wall just agree to its joining the pedestal.

Wall six courses high. Four courses remain at the N.E. corner, without a top, so 5 is the minimum The dressed back of the pedestal shows 6 as the maximum. The step in front of the pedestal agrees to 6, which is more likely therefore than 5.

Thickness of the wall. Shown by flat face inside the N.E. corner, which is probably the face of the court; there may, however, have been a fine stone lining.

Rounded top of wall. Copied from the parabolic edge to a courtyard of a mastaba of the Vth dynasty, at Gizeh.

Pavement of court. Beside the rough blocks of brownish limestone scattered over the court, there is a uniform spread of chips of fine white limestone, which is probably therefore from the destroyed pavement.

The evidence about the pedestals is as follows:—

Pedestal of brownish limestone. Dressed face remaining on all sides of it; no fragments of any other stone lying about, except pieces of the quartzite sandstone colossus: and no excess of flat pieces of that over the curved, beyond the proportion natural in the colossus.

Face remaining. Two or three stones on each side (of the eastern pedestal) with flat dressed faces, parallel to the whole mass, and in one plane: such faces would be very improbable if it was part of a larger mass partly destroyed.

Steps in front of pedestal. The course next below the plane faces at the top projects considerably, with broken front edge; lower down, the courses project with cut edge, and therefore must have had another block in front of them, showing a further step out. The width given here to the steps, and the position of the joints, are only assigned by eye.

Steps at side of pedestal. These are probable, from similar reasons; but are less certain.

Height of pedestal. This is only restored to the existing top-course level; it may have been one or two courses higher, but then a further recession of the face would be demanded, which is not likely, and the colossus would be too high above the courtyard.

The evidence about the statues is as follows:—

Statue of a man. Nose found of western figure.

Not a sphinx. Drapery was found, several pieces.

Seated and not standing. Pieces of Nile figures, and large *sam* from sides of throne.

Kalantika wig. Piece of drapery of wider ribbing than that of the waist cloth.

Decoration of throne. Base of *sam* (xxvii. 2), foot of Nile figure, pieces of stems and flowers (xxvii. 5, 6) of plants. From the front part are pieces of *peh* and hawk (xxvii. 8), and false door (9) from the *ka*-name, in the usual position of inscriptions down the sides of the front.

Base of throne. Fragments of many figures of the nomes bearing offerings (xxvii. 3 and 4, and others); facing toward the front (north), as the piece 3 was found on the west side of the pedestal; as high from base of block as drawn, according to base surface remaining on fig. 3. The spacing apart is not certain, but by the most likely proportion the 42 nomes

would just arrange round the base, 7 at ends, 14 at sides.

Monolith. The most probable place for a joint would be just above the base, where the throne stands on it, as the block there turns to width instead of height. Yet it is certain no joint existed at that part, as we see not only a small depth remaining beneath the *sam* (fig. 2), but the block is there broken by wedge-holes, which show that there was no joint near that part. The height of the base above the nome figures is not fixed.

69. We will now turn to the evidence as to the actual size of the colossi. This is somewhat complicated, as we have no complete statue of the same period with which to compare the details of this. The materials I have used are (1) the throne and lower part of a statue of Usertesen III., which I found at Nebesheh (Brit. Mus.); (2) a photograph of the painting at El Bersheh of a colossus on a sledge, of the time of Usertesen II.; (3) a small statue of Sebekemsaf, of XIIIth dynasty, which I bought at Thebes; (4) a photograph of a statue of Amenhotep III. (Brit. Mus.). Taking (1), as a basis of comparison, and supplementing it by means of the others where needful, the results are as follow:—

Fragments measured.		Consequent height of colossus.
	ins.	ins.
Nose, wide	11·5 ...	365
Drapery ribbing, wig ...	1·7	
„ „ kilt ...	1·2 ...	273
Sam, centres apart ...	8·2 ...	462
„ width at base ...	14·2 ...	510
Flowers, wide, on head (?)...	3·4 ...	405
„ „ terminal (?)	3·9 ...	329
Stems, wide	1·7 ...	583
Peh sign, high	1·7 ...	528
Radius of curve at back of throne	9·24 ...	316
Mean of all ...	...	419

The height of the figure seated may therefore be taken as about 420 inches, or 35 feet; and though these data vary greatly in value, yet this will fairly represent the best of the results, 462, 510, and 316. The height of the base by the proportions of (1) would be 81 inches, by (2) 28 inches, by (4) 57 inches, and by a Bast statue in Brit. Mus. 42 inches. Judging by the nome figures, it could not be under 48, as their height from the lower surface is known. The length and breadth of the base have been estimated by eye from the size of the upper step of the pedestal alone: three checks on this exist; first, the breadth of the step around it thus comes out equal, when the length of the base is double its width; second, it is well proportioned to the size of the statue deduced from the fragments above; third, it would just hold the forty-two nomes in the most likely arrangement of spacing, as in the restoration.

We have now specified all the data for the recovery of these monuments; and we see that there is scarcely any point on which an uncertainty remains. The statues were 35 feet high, with bases 4 feet high, or 39 feet high in all, monoliths of quartzite sandstone, polished until it glitters like glass. They stood on pedestals 21 feet high, so that the whole mass rose 60 feet. The courtyards around them were about 80 feet wide and 97 feet long inside, or 113 by 130 feet outside, the wall being 16½ feet thick, and rising 13½ feet from the ground.

There only remains one feature which cannot be recovered—the gateway. In the N.E. corner of the eastern court several fragments of red granite were found, which almost certainly belong to the gate. There is a plain torus roll, from a top edge, and a banded torus from an upright edge, with panelling, and parts of the ancient design often seen in panels of the old kingdom (Pl. xxvii. 4, 42). With these was found a portion of an inscription (xxvii. 1) of Amenemhat III., the most likely king to have erected such monuments. And though the inscription mentions his restoring works that were injured, yet this may refer to the works of Amenemhat I. in regulating the Fayum, which Amenemhat III. certainly improved and enlarged, and need not imply that these statues belonged to a previous king.

The supposed dyke of Linant forms a corner just about Biahmu, and as this was probably a reclaiming dyke, these two colossi must have stood almost on the dyke, overlooking the lake in front of them; the road from the lake across the reclaimed land up to the capital probably passing between them, as it does at this day.

70. The following levels and measurements were taken on the E. court. The foundation projects 40 inches beyond the foot of the wall. The total length of wall on the E. side is 1570; the foundation along the N. 1400, and therefore the wall 1320. The sides of the pedestal are about 585 from the foundation edge on either side. The back face of the pedestal points to 1360 from the N. face of the wall. The stones marked on the plan are all drawn exact at the N.E. corner, and also the few at the S.E. and N.W.; the stones along the sides are only general in character. The stones marked on Lepsius' plan in *Denkmaler* are only representative, and not exact. The pedestal is

about 260 × 390 at the broken base; the finished faces at the top are 257 × 389. The angle of the sloping wall at the N.E. corner, on such stones as are apparently unshifted, is, on N. side, 65° 24′, 58′, 66° 6′, 1′—mean, 65° 52′; on the E. side, 64° 20′, 9′, 13′—mean, 64° 14′. Mean of both sides, say 65°.

The levels are taken from an arbitrary datum, 200 inches beneath the level of the pavement at the N.E. corner. The courses are as follow:—

W. pedestal.	E. pedestal.	Wall at N.E.
	468	
449 . . .	447	
419	422	
390	391	
364 . . .	365	
328	334	
303	307 . . .	307
272 . . .	275	281
243	245	256
210	212	224
179 . . .	186	200 pavement.
	146	

Here it will be noticed that the courses are intentionally the same in thickness and in level in the two pedestals, especially considering that there are small fluctuations of two or three inches in the course lines.

The levels of the foundation of the courtyard wall are, at N. side, 98 to 116, varying; N. of E. side, 104; S. of E. side, 114. The ground is black mud with strata of coarse sand irregularly through it; the sand is native, and is so coarse and clean that it must have been brought in by the bursting of chance dams in the entrance of the Fayum, which let a mass of water in that swept all before it, and brought with it a rush of desert soil. Over this lies a bed of mixed earth and chips beneath the E. pedestal; and some smaller blocks (*e.g.* 18 × 10 × 8) underlie the large ones to give them a better bearing. There is no trace of foundation deposits or of artificial sand beds under the corners of either the wall or the pedestal. Two curious deep holes were found at the E. pedestal filled up with dust and fragments of the colossus, which shows that they must have been dug when the statue was being broken up. One hole, south of the pedestal, and therefore under the wall-site, went down to level 50, or 8 feet below the base of the pedestal. The other was a shaft 40 across, down to 83 level, at 180 E.S.E. of the pile. Possibly these were part of an attempt to undermine the pedestal, and so let the whole structure fall over for destruction. Some pieces of a green glazed tablet, with traces of red glaze on it, were found by the E. pedestal; but much decomposed. They may have been part of some glazed ornamental panels, or possibly part of a foundation deposit beneath the pavement now destroyed.

The excavation was complete at the E. pedestal; every bit of soil having been turned over, and every stone examined, from 60 feet south of the pedestal up to the outside of the N. wall. At the W. pedestal only some trenches and holes were dug to recover pieces of the colossus around the pedestal; the whole of the W. structure is so much more ruined than the E. that it was less worth exploring. The fragments of the colossi which I left behind are buried in the hole I dug at the S.W. corner of the E. pedestal, excepting some large pieces which I left out. The pieces brought to England, and two casts (xxvii. 2, 3), are in the Ashmolean Museum, Oxford.

CHAPTER IX.

ARSINOE.

71. As my object in excavating was not the later remains, but rather those of the middle kingdom, I did not attempt to do anything in the wide-spread ruins of Arsinoe, except at the site of the ancient temple at the northern end of the mounds. This is apparently the oldest part of the place, a statue near there being of Amenemhat I., who was probably the founder of the Fayum province. From there the town has continually been rebuilt more and more to the south, until the present Arab town of Medinet el Fayum extends to nearly two miles from the north end of the temple site. For a general plan of the mounds, and an account of their antiquities and papyri, the best source is an excellent paper by Schweinfurth and Wilcken, in the *Zeits. gesellsch. Erdkunde*, Berlin, 1887. Here I shall only consider the ground of the temenos and its neighbourhood, as shown in Pl. xxix.

The great temenos covers a large space, being over 1000 feet long and 750 feet wide. The brick wall around it is about 30 feet thick, and still about 40 feet high in the least worn part. The bricks are 16·6 × 8·3 × 4·4 inches, and therefore not later than the XXVIth dynasty, though, perhaps, earlier than that. Most of the site is now cultivated land, belonging to Ferhat Effendi, who reclaimed it three or four years ago, hence research here is almost impossible now; and many pieces of statues and inscriptions have been found, and much stone has been removed, in course of this cultivation. So far as the still bare ground was not too deeply encumbered by rubbish, I have excavated in it, and so recovered some notion of the plan of the temple.

Nearly all the stone is destroyed, but the sand beds on which it was laid still remain; and by tracing them the position of the walls can be ascertained. It will be seen on the W. side that there were two lines of building, too wide apart to have had a roof between them. Here, then, was probably a wall surrounding the temple, as at Edfu: the temple itself appears to have had a peristyle colonnade all round it, as bases of columns remain along the inner bed of sand. On drawing the axis, from the middle of the pylon inward, the opposite side of the temple falls on the dotted lines; and on excavating here a large base was found in just the line of the colonnade. This would give a breadth across the colonnades of 490 feet; but it is difficult to credit such an enormous building, as it would be half as wide again as the great temple of Karnak. This building was of late date, probably of the XXVIth dynasty, or even Ptolemaic, as a block with a fine bust of a king offering, evidently of Ramesside age, was found used in the foundations. Another re-used block is the piece of an early tomb (Pl. xxvii. 13), which, like some similar fragments, had perhaps been brought from the cemetery at Hawara. At the pylon are some immense blocks of red granite, remains of the gateway; these were in position until about 1860, when the stone grubbers of Medinet found that there was limestone beneath them, and steadily mined it out until the standing parts fell, and the threshold tipped over and sunk. The largest block is 25 feet long and 7½ feet wide, and has still one block of the side standing on it (marked black in plan). I excavated all round these blocks, and found another piece of re-used granite of Amenemhat III. (Pl. xxvii. 11) in addition to the inscription already known (xxvii. 10); these blocks show conclusively that this pylon is later than the XIIth dynasty, and the traces of earlier work will be shown further on. On the inner side of this pylon are two sand beds, probably belonging to the bases of colossi, but they are not of the first epoch of building. Further in are the sand beds of two walls. A sand bed runs along the face of what appears to be the temenos wall, probably to support a stone-facing on either side of the pylon; and in this bed was found a very late foundation deposit of four plain gilt blocks of limestone.

72. Outside of the temenos there is a long space entirely clear of houses; the soil is nothing but loose earth and pottery; and this continued comparatively clear until Roman times, as a Roman red-brick house was mined out for bricks this year, just in the line of the approach to the pylon, and as low as the pylon itself. In the late Roman times, however, this clear ground was used for rubbish, and a great rubbish mound has been piled up on either side, still leaving a hollow over the line of the road. On looking over this area it was seen that a wall bounded it on the W., and that this was not merely a row of houses, but the house walls lay on the other side of a street; this wall was therefore the boundary of the pro-temenos, and the houses on the E. side appear to come to an end, and not to pass under the great rubbish mound. I excavated down the side of the wall, and found that it rested on an older wall in the same line, down which I excavated to the bottom of it. I also excavated a chain of pits across the south end of this open space, and found, at a great depth, that there was a distinct roadway of pottery laid down, belonging to the earliest times. As the site of the temple and town must have been a dead level when first settled, probably in the XIIth dynasty, the levels of all the foundations are of great value as pointing out the history of the place. We shall therefore proceed here to state the various levels found, in chronological order.

73. The scale of levels is reckoned in inches, and starts from an arbitrary zero below any point reached, the threshold of the pylon being called 200. The rate of accumulation, roughly speaking, has been about 8 inches per century, the whole of it artificial and without any relation to the natural rise of deposited soil in the Nile valley, which does not seem to have taken place in the Fayum. The earliest level of distinctly intentional work is in the approach, or pro-temenos; here a bed of broken pottery and clean sand has been laid down 15 inches thick, apparently for the road to the temple, and beneath it the mud is quite clean black Nile deposit for the 5 inches examined. It would be well perhaps to search deeper, but the hole being already 21 feet deep through ground that was not too firm, I did not continue it, as the mud appeared to be quite native. This level of the pottery is 98 to 111; and as the road was probably raised somewhat, we may regard 100 as the original level of the ground in the XIIth dynasty. The position of the statues of Amenemhat I. and Bast suggests that the block may have decorated the entrance to the pro-temenos. At the pylon the earliest period is shown by a great bed of clean yellow sand, 5 feet thick, on which the earliest pylon stood: this is at 53 to 113; and as the ground was very likely raised for the building,

this agrees with the level of 100 for the original ground. Within the temenos, pottery is found down to 99, or perhaps lower, under the sand beds of the late walls. But much lower depths are found in the hollow on the N.E. of the pylon, and in the great hollow in the N.W. corner. In the N.E. ground, mud, with pottery and stone chips, lies from 12 to 48, and sandy earth and pottery from 48 to 132 surface level, which is 6 feet below the general ground (199–203): so here is evidently a very early "made-ground" up to 48, covered with low accumulations. In the N.W. ground, the lowest bit of pottery is at 13 (the hole goes down to 9), but there is mud over it to 55: the pottery is probably prehistoric, and the starting level 55, agreeing to the made-ground level of 48. Hence the ground in the temenos seems to be about 50, or 4 feet deeper than the outside level: this may be due to the earth for the primitive brick-wall having been taken from the inside of the enclosure. From 55 to 84 at the N.W. is burnt pottery, a waste-heap ground; and over that mud from 84 to 117, the present ground in the low hollow.

74. Leaving, then, the level of the XIIth dynasty, which is 100 in the approach and pylon, and 50 in the temenos, the next period of building is probably the Ramesside age. To this we may attribute the second sand bed under the pylon, from 140 upwards, on which the granite threshold rests, with its top surface at 200. For this the earlier work of Amenemhat III. was re-used. To this age belong probably the flint knives (Pl. xxviii. 2 to 12), which are found in the earth at the south part of the deep N.W. hollow, at about 117 to 126 level: they are thus at 70 above the level of the XIIth dynasty in the temenos, and about 100 beneath the XXVIth dynasty or Ptolemaic level; hence they can hardly be attributed but to the XVIIIth or XIXth dynasty. It may be noted that this deep hollow was far deeper about twenty years ago, but earth has been dug away from the south side of it, and thrown into the deeper parts to level it; in this digging out the flint-ground was exposed. A boy brought the large flint-knife to me (fig. 5); and finding on inquiry that it came from cultivated ground where I could not work, I had to encourage the people to hunt for them, by giving a good value for all that were brought to me. The better ones are now in the British Museum. The first wall of the pro-temenos is also Ramesside apparently; it was founded at 172 level, and was 9 feet high even in ruin.

The next period of building is probably that of the XXVIth dynasty. To this period probably belongs the present temenos wall; the size of the bricks shows that it cannot be of the Ptolemaic age, and yet the high level of it at the S.W. corner, 316, requires it to be dated as late as possible, to allow for such a depth of rubbish. As the Ramesside ground level at the pylon is 200, the sand-bed of a stone casing to the temenos wall at 194 must belong to a later age, and is probably of the XXVIth, as earth would not accumulate rapidly at the pylon. The foundation deposit, at 168, may be of this age, though, from its poor quality, it would seem to be later. The sand beds of walls a little inside the gate are also of this date presumably, as they are from 139 to 200, or 61 thick, and another with top at 159 and 171. Throughout all this period earth and pottery were accumulating in the pro-temenos, until it reached a level of 260 (or over 12 feet thick above the primitive road), before mere rubbish was accumulated there. The waste heaps of pottery and rubbish reach from 260 up to 343, the present ground level; yet that ground, with 19 feet of accumulation, is the lowest region of the whole mounds.

The great temple, of which the remains of the colonnade have been found, belongs probably to the Ptolemies rather than to the XXVIth dynasty. The Psametici were not great builders; not a single important temple in Egypt is due to them, the Empire (XVIII.–XX.) and the Ptolemies being the periods of great buildings. At Nebesheh, for instance, Aahmes deserted the site of the large temple, and built a small one outside of it. That some large temple was built here under Philadelphos is probable from the name of the town having been changed in honour of Arsinoe. That queen was the heiress according to ancient Egyptian law, and Philadelphos reigned by his marriage with her; she is honoured as the *nebt taui*, or "lady of both Egypts," and has a throne cartouche as well as her personal cartouche. On the stela of Pithom she stands with the great gods Tum, Osiris, Haremkhuti, and Hathor, receiving the offerings of Ptolemy and granting blessings to him; and the same tablet mentions Ptolemy building a city at Kemuerma in honour of Arsinoe, named after her, and with a sanctuary dedicated to her, in which she and Ptolemy were worshipped. This being the case at the Arsinoe of Suez, it is probable that a temple was similarly founded to Arsinoe at her town in the Fayum. The sand beds of walls and colonnade are therefore probably of Ptolemy II.; the bed is from 164 to 182, or 18 thick, its top varying from 177 to 190; and the stones still on it are from 183 to 227, or 43 thick. The bases of the columns have been left after

the substructure of square blocks has been removed, and hence their present level is below the original place, and the pavement surface was probably about 250. A pavement near the pylon, where the earth probably rose less than elsewhere, is at 218 (top face), and is probably of the same age. The bases on the eastern side of the temenos are at a lower level, being only 147 (large base) and 168 (smaller stone); but yet it seems very probable, as they are evidently moved, that they were at a higher level, and it would be difficult to dissociate them from the similar bases on the W. side.

During the Roman times the early wall of the pro-temenos (founded at 172 and even now rising to 281) became partly ruined and partly buried, and a fresh wall was founded on its line. This new wall is based at 310, and rises to 415 still, although much ruined: it is nearly below the surface of the rubbish which overlies that part. The access to the temple was therefore still regarded, and the pro-temenos was not blocked by building until red-brick houses were placed there, probably in the IIIrd or IVth cent. A.D. Soon after that, the rubbish mounds were piled up, and in the Vth and VIth cent. overflowed and filled up the entrance to the then deserted temple.

This seems to be as much as can be now ascertained of the history of this place, after it has been so thoroughly plundered of its stone, and is now under cultivation. No doubt the old foundations, and pieces of statues, like that of the Hyksos chief now at Bulak, lie beneath the fields of corn and cotton; but when the Government has once allowed a site to be cropped there is an end of archæology unless a serious rent is paid for excavation. The enormous depth of the rubbish of later times deters all attempts at clearing the place; my pits in the lowest part of the mounds went down 21 feet to the primitive soil, and in the temenos the depth is about 13 feet. So long as other sites are less encumbered and uncultivated, Arsinoe will not be a promising field for early research.

CHAPTER X.

WEIGHTS.

75. Although no weights were found during the work in the Fayum, yet I obtained some hundreds this year, through the Arab dealers about Cairo, who collect them for me. These are from Naukratis, Sais, Defenneh, Memphis, and a lot of unspecified: these last, on examination of their varieties of weight, are clearly from Memphis also, and have therefore been incorporated in the Memphis list here; if a few may be from elsewhere it is only what might occur by transit in ancient times. A friend also brought me some from Kus; these give some idea of the units in Upper Egypt, but a systematic collection from there is much needed, especially of dated weights from scientific excavations. The arrangement of the following lists is the same as in the Memphite lists published last year in "A Season in Egypt, 1887," and the numbering is consecutive from that list. The form-numbers refer to the plates in "Naukratis," "Defenneh," and "A Season;" as any student must refer to those works, there is less need to repeat the plates here.

MEMPHIS.

EGYPTIAN KAT STANDARD.

No.	Material.	Form.	Present.	Ch.	Ancient.	×	Unit.
4501	Basalt, bk.	33–37	274·9	—	276	2	138·0
2	Basalt, br.	33–165	1382·9	—	1384	10	138·4
3	Syenite, bk.	40			277·1	2	138·5
4	Basalt, br.	165			1387·0	10	138·7
5	Basalt, br.	33–165	2774·5	—	2778	20	138·9
6	Syenite, gy.	11–38	2778·4	—	2779	20	138·9
7	Basalt, br.	38–43			695·7	5	139·1
8	Basalt, bk.	33–36			278·4	2	139·2
9	Basalt, br.	165			278·6	2	139·3
4510	Basalt, br.	33			139·3	1	139·3
1	Basalt, bk.	25			278·9	2	139·4
2	Basalt, bk.	38–43			1394·7	10	139·5
3	Basalt, br.	33–165	2780·5	—	2790	20	139·5
4	Marble, w.	14–23		?	1395·9	10	139·6
5	Syenite, bk.	36			698·4	5	139·7
6	Bronze	33	141·0	2·1	139·8	1	139·8
7	Basalt, br.	33			279·6	2	139·8
8	Basalt, br.	65	2792·4	—	2796	20	139·8
9	Basalt, br.	26–33			1398·8	10	139·9
4520	Bronze	36	672·4	30?	700	5	140
1	Limestone, br. w.	35–165			700·0	5	140·0
2	Basalt, br.	38			700·6	5	140·1
3	Basalt, bk.	27			281·0	2	140·5
4	Basalt, br.	165	2797·3	—	2810	20	140·5
5	Bronze leaded	32–101	6978	60	7040	50	140·8
6	Basalt, br.	12–165			563·2	4	140·8
7	Bronze	33–36	699·6	4	704	5	140·8
8	Basalt, gy.	38–40			2821·3	20	141·1
9	Basalt, br.	23			706·8	5	141·3
4530	Basalt, br.	33	352·4	—	353·5	2½	141·4
1	Basalt, br.	12–26			707·6	5	141·5
2	Granite, gy.	38			2829·4	20	141·5
3	Basalt, br.	165			707·7	5	141·6
4	Basalt, br.	19–33			1417·8	10	141·8
5	Bronze	36	282·9	3	283·8	2	141·9
6	Basalt, br.	38			709·5	5	141·9
7	Bronze	101	717·3	6	711	5	142·2
8	Syenite, gy.	12–20			2846·8	20	142·3
9	Basalt, bk.	33			284·9	2	142·4
4540	Basalt, br.	26–33	70·9	—	71·3	½	142·6
1	Sandstone, lt. br.	33–37	2856·4		2861	20	143·0
2	Hæmatite, bk.	49			143·2	1	143·2
3	Basalt, bk.	19–20			143·3	1	143·3
4	Syenite, gy.	2			1433·1	10	143·3
5	Basalt, gy.	20–45			71·9	½	143·8
6	Basalt, bk.	27			719·4	5	143·9
7	Basalt, br.	40–44			1439·5	10	143·9
8	Basalt, bk.	26–33			144·1	1	144·1
9	Basalt, bk.	36–37			288·3	2	144·1

No.	Material.	Form.	Present.	Ch.	Ancient.	×	Unit.
4550	Basalt, br.	25	718·9	—	723	5	144·6
1	Basalt, bk.	38-41			1440·5	10	144·6
2	Basalt, bk.	20-26			1447·0	10	144·7
3	Syenite	12-20	2891·6	—	2894	20	144·7
4	Basalt, bk.	33-165			289·8	2	144·9
5	Basalt, bk.	20-33			145·2	1	145·2
6	Basalt, br.	12-165			1455·4	10	145·5
7	Granite, pink	26-33			29110	200	145·5
8	Limestone, gy.	21	291·1	—	291·3	2	145·6
9	Basalt, bk.	19			145·8	1	145·8
4560	Basalt, br.	33-165	729·1	—	729·5	5	145·9
1	Basalt, bk.	12-43			291·9	2	145·9
2	Bronze	33-165	146·6	2·6	146·0	1	146·0
3	Basalt, bk.	33			1460·2	10	146·0
4	Basalt, br.	20-27			146·1	1	146·1
5	Basalt, br.	38-44			731·3	5	146·3
6	Porphyry, bk.	11-38			2928·5	20	146·4
7	Steatite, gy.	26-36	146·0	·57	146·5	1	146·5
8	Granite, br.	38			7327	50	146·5
9	Basalt, br.	12-27			146·6	1	146·6
4570	Basalt, br.	33			293·5	2	146·7
1	Basalt, bk.	17			293·7	2	146·8
2	Granite, rd.	33-165			29360	200	146·8
3	Basalt, bk.	33	733·3	—	734·5	5	146·9
4	Limestone? gy.	165 tall	73300	—	73460	500	146·9
5	Hæmatite, bk.	40			73·5	½	147·0
6	Basalt, bk.	20-33			147·1	1	147·1
7	Basalt, bk.	33-165			147·1	1	147·1
8	Basalt, bk.	26-33			735·9	5	147·2
9	Basalt, bk.	33-165			738·4	5	147·7
4580	Basalt, br.	165	738	—	739·5	5	147·9
1	Basalt, bk.	40-45	737·1	—	740	5	148·0
2	Basalt, bk.	33			296·3	2	148·1
3	Basalt, br.	33			296·4	2	148·2
4	Basalt, br.	26-33	740·6	—	741·5	5	148·3
5	Basalt, br.	20-26			74·2	½	148·4
6	Basalt, bk.	36			148·5	1	148·5
7	Alabaster, w.	35-38	742·3	—	742·8	5	148·6
8	Basalt, br.	33	742·7	—	743	5	148·6
9	Basalt, br.	33-40	1485·3	—	1486·0	10	148·6
4590	Syenite, gy.	27 tall			148·7	1	148·7
1	Basalt, br.	24-26			743·6	5	148·7
2	Basalt, br.	38			2974·9	20	148·7
3	Basalt, br.	165	742·2	—	744	5	148·8
4	Basalt, bk.	26-33			743·8	5	148·8
5	Basalt, bk.	11-38			1489·0	10	148·9
6	Bronze	36-37	208·7	·7	298	2	149·0
7	Basalt, br.	20-33	2980·2	—	2981	20	149·0
8	Basalt, br.	33 tall			1491·3	10	149·1
9	Basalt, bk.	110-113			298·5	2	149·2
4600	Basalt, bk.	26-33			149·6	1	149·6
1	Basalt, br.	26-33			14970	100	149·7
2	Basalt, bk.	33			749·7	5	149·9
3	Syenite, gy.	33			300·2	2	150·1
4	Basalt, bk.	165	1502·2	—	1503	10	150·3
5	Basalt, br.	27-33			301·1	2	150·5
6	Basalt, bk.	20-33			301·2	2	150·6
7	Basalt, br.	10-35			75·4	½	150·8
8	Syenite, gy.	35-44			754·6	5	150·9
9	Basalt, br.	27-33			302·0	2	151·0
4610	Basalt, br.	33-165	7535		7555	50	151·1
1	Basalt, bk.	33-165			50·6	½	151·2
2	Basalt, bk.	9-38			1519·3	10	151·9
3	Basalt, br.	33-165			3045	20	152·2
4	Bronze	36	76·1	·3	76·4	½	152·8
5	Basalt, br.	27-35			1535·4	10	153·5
6	Basalt, bk.	20			153	1	153·6
7	Basalt, br.	33-36			1537·1	10	153·9
8	Basalt, br.	37-38			3080·2	20	154·0
9	Basalt, br.	33			308·3	2	154·1
4620	Basalt, bk.	27-33			154·9	1	154·9

ASSYRIAN SHEKEL STANDARD.

1	Basalt, bk.	11-38	1191·6	—	1193·0	10	119·3
2	Alabaster	19-40			120·7	1	120·7
3	Limestone, lt. br.	35-39			122·6	1	122·6
4	Basalt, bk.	12-165			6139	50	122·8
5	Basalt, bk.	20-26			61·8	½	123·6
6	Limestone, br.	23-101			41·8	⅓	125·4
7	Basalt, bk.	58-63	1250·3	—	1262	10	126·2

No.	Material.	Form.	Present.	Ch.	Ancient.	×	Unit.
4628	Limestone, w.	43-45			254·5	2	127·2
9	Basalt, br.	36-101	636·3	—	637	5	127·4
4630	Limestone, lt. br.	58			637·3	5	127·4
1	Alabaster, w.	25-29			128·2	1	128·2
2	Bronze	26	127·0	1·5	128·5	1	128·5
3	Basalt, bk.	38-43			642·9	5	128·6
4	Hæmatite, bk.	106			128·6	1	128·6
5	Basalt, br.	38-44			1287·7	10	128·8
6	Limestone, lt. br.	49			652·4	5	130·5
7	Basalt, br.	165	6445	—	6525	50	130·5
8	Limestone, w.	38			261·7	2	130·8

ATTIC DRACHMA STANDARD.

9	Syenite, bk.	38-44			651·5	10	65·1
4640	Basalt, bk.	26			43·7	⅔	65·5
1	Basalt, bk.	36-37			1310·9	20	65·5
2	Copper slag	20-40	2608	—	2630	40	65·7
3	Syenite, bk.	38	6552	—	6572	100	65·7
4	Basalt, br.	19			664·2	10	66·4
5	Bronze	33-36	819·5	5·5	814	12½	66·1
6	Bronze	36	1653·3	5	1658	25	66·3
7	Basalt, br.	14-165			3314·8	50	66·3
8	Limestone, lt. br.	30-32	131·5	—	133	2	66·5
9	Alabaster, w.	106			531·7	8	66·5
4650	Serpentine, gy.	38-43	661·5	—	666	10	66·6
1	Granite, rd.	33-165	65770	—	66570	1000	66·6
2	Bronze	33	269·6	2·6	267	4	66·7
3	Basalt, bk.	27-165			667·0	10	66·7
4	Basalt, br.	20-165			2667·7	40	66·7
5	Basalt, bk.	2-168			668·3	10	66·8
6	Basalt, bk.	12-14	3338	—	3339·5	50	66·8
7	Syenite, gy.	25			669·4	10	66·9
8	Hæmatite, bk.	49			134·5	2	67·2
9	Limestone, br.	25-36			671·0	10	67·2
4660	Basalt, bk.	70-109			1343·9	20	67·2
1	Basalt, bk.	165			2687·0	40	67·2
2	Basalt, bk.	33-165			6740	100	67·4
3	Alabaster, w.	29-155			135	2	67·5
4	Basalt, bk.	20-26	135·3	—	135·6	2	67·8
5	Bronze, bk.	165	31·9	—	34?	½	68
6	Basalt, bk.	27-33			45·5	⅔	68·3
7	Serpentine, gy.	150			136·6	2	68·3
8	Limestone, br.	17-165			273·4	4	68·3
9	Basalt, bk.	79-153			136·9	2	68·4
4670	Basalt, bk.	27-33			685·2	10	68·5
1	Basalt, br.	33-37	2732	—	2739	40	68·5
2	Basalt, bk.	24			137·5	2	68·7
3	Basalt, bk.	39			6874	100	68·7
4	Basalt, bk.	38			137·8	2	68·9

PHŒNICIAN SHEKEL STANDARD.

5	Bronze	26	54·7	2	52·7	½	210·8
6	Granite red	12-165			5393·6	25	215·7
7	Basalt, gy.	19-39			1726·1	8	215·7
8	Bronze	126	13·5	·5	13·6	1/16	217·6
9	Basalt, bk.	9-38	2192·4	—	2194	10	219·4
4680	Basalt, bk.	33			55·3	¼	221·2
1	Basalt, bk.	54-55			2267·5	10	226·8
2	Basalt, bk.	165	11290	—	11340	50	226·8
3	Basalt, bk.	79-81			1165·4	5	233·1
4	Bronze	40	116·1	5	117	½	234·0
5	Basalt, br.	64	2344	—	2351	10	235·1
6	Basalt, br.	19-40			1176·4	5	235·3
7	Limestone, gy.	40-44			235·6	1	235·6
8	Bronze	25	119·6	3	118	½	236·0
9	Basalt, br.	38	1199·4	—	1201	5	240·2
4690	Bronze × mark	26-33	1222·9	14	1228	5	245·6

ÆGINETAN DRACHMA STANDARD.

1	Granite, br.	23-165			9360	100	93·6
2	Marble, w.	29	1007·7	3	1011	10	101·1
3	Limestone, lt. br.	2-38			102·6	1	102·6

EIGHTY GRAIN STANDARD.

4	Basalt, bk.	20-27			777·8	10	77·8
5	Basalt, br.	20-29			1555·6	20	77·8
6	Sandstone, lt. br.	12-44			1050·9	25	78·0
7	Sandstone, lt. br.	12-38	3124·2	—	3126	40	78·1

No.	Material.	Form.	Present.	Ch.	Ancient.	×	Unit.
4698	Basalt, br.	27			784·4	10	78·4
9	Syenite, bk.	10	(Gizeh)		3163·3	40	79·1
4700	Basalt, br.	33			158·5	2	79·2
1	Basalt, br.	38–156			410·4	5	82·1
2	Basalt, bk.	10–38			4165	50	83·3

Persian Silver Standard.

3	Basalt, br.	101			336·6	4	84·1
4	Limestone, w.	29	353·2	—	353·6	4	88·4

Roman Uncia Standard (1).

5	Limestone, bk.	71 flat			1221·5	3	407·2

KUS (all bronze).

6	Kat	36	295·7	1·5	296·0	2	148·0
7	Assyrian	14	41·0	1·7	41·7	½	125·1
8	,,	26	42·8	·8	42	½	126·0
9	,,	55–66	126·1	2	128	1	128·0
4710	Attic	26	135·0	1·0	136·0	2	68·0
1	Phœnician	33	55·3	·3	55·6	¼	222·4
2	Æginetan	33	100·9	6	99	1	99·0

76. DELTA.

N, Naukratis: S, Sais: B, Benha.

Egyptian Kat Standard.

3	Basalt, bk.		38–40			1388·1	10	138·8
4	Basalt, br.	B	36	698·9	—	699·0	5	139·8
5	Serpentine, bk. w.		26–33			70·0	½	140·0
6	Basalt, br.		165	1400·1	—	1400·6	10	140·0
7	Basalt, br.		33–34			2799·9	20	140·0
8	Basalt, br.		38			704·4	5	140·9
9	Basalt, br.		27			283·0	2	141·5
4720	Basalt, br.	N	12–23			2839·8	20	142·0
1	Basalt, br.		26			142·6	1	142·6
2	Basalt, br.	B	27–40			1429·1	10	142·9
3	Basalt, br.		25			3580·6	25	143·2
4	Granite, gy.		27–33			2867·1	20	143·4
5	Basalt, gy.	S	38			717·6	5	143·5
6	Basalt, gy.	S	38			719·1	5	143·8
7	Basalt, br.		27			288·1	2	144·0
8	Basalt, br.	B	38			720·9	5	144·2
9	Syenite, gy.	S	23–40	7207	—	7210	50	144·2
4730	Basalt, br.		33			289·1	2	144·5
1	Granite, gy.		37–39			723·3	5	144·6
2	Basalt, br.		20–24			48·3	⅓	144·9
3	Basalt, br.	N	33			290·3	2	145·1
4	Basalt, br.		26			1452·1	10	145·2
5	Basalt, br.		165	1457·1	—	1460	10	146·0
6	Basalt, gy.	S	38–43			292·2	2	146·1
7	Marble, br. w.		36–37			739·5	5	146·1
8	Basalt, br.		42–44			2937·7	20	146·9
9	Basalt, gy.		27–31	1467·9	—	1471	10	147·1
4740	Basalt, br.		26–36	1470·2	—	1473	10	147·3
1	Basalt, br.		33	147·1	—	147·6	1	147·6
2	Basalt, br.		13–26	1482·0	—	1483	10	148·3
3	Basalt, gy.		38–39			296·6	2	148·3
4	Basalt, br.		24–26			2969·5	20	148·5
5	Basalt, br.		20–33			148·7	1	148·7
6	Basalt, br.		26–33			2975·7	20	148·8
7	Basalt, br.	S	26–101	2990	—	2998	20	149·9
8	Basalt, gy.	S	20–40			758·7	5	151·7
9	Basalt, br.		20–24			305·3	2	152·6
4750	Basalt, br.		33			76·7	½	153·4
1	Basalt, br.		165			1536·1	10	153·6

Assyrian Shekel Standard.

2	Serpentine? bk.		12–43	1234·6	—	1242	10	124·2
3	Hæmatite, rd.		49	618·6	—	626	5	125·2
4	Alabaster, w.		25–28			63·1	½	126·2
5	Bronze		33–101	258·3	5·	257	2	128·5
6	Basalt, bk.		19–38			1299·1	10	129·9
7	Bronze		100	106·7	—	130?	1	130?

Attic Drachma Standard.

No.	Material.		Form.	Present.	Ch.	Ancient.	×	Unit.
4758	Basalt, br.		12–165	6361	—	6371	100	63·7
9	Basalt, gy.	S	44			130·1	2	65·0
4760	Basalt, br.		40–43	1315·3	—	1315·6	20	65·8
1	Basalt, br.	S	32–33			6597	100	66·0
2	Syenite, bk.	S	8			1326·7	20	66·3
3	Basalt, br.		40–43			1327·6	20	66·4
4	Basalt, br.	B	48			672·1	10	67·2
5	Basalt, br.		38			1347·7	20	67·4
6	Marble, br.		20–26			134·9	2	67·4
7	Limestone, w.		3–8			1360·5	20	68·0
8	Basalt, br.	B	20–23			2725·9	40	68·1
9	Alabaster, w.		26–40			136·4	2	68·2
4770	Basalt, br.		40	3398·8	—	3414	50	68·3
1	Basalt, bk.		165			1370·6	20	68·5
2	Syenite, gy.		38			1373·7	20	68·8
3	Basalt, bk.		38			3464	50	69·2
4	Syenite, gy.		38–43			417·6	6?	69·6

Æginetan Drachma Standard (1).

5	Basalt, br.		12–23			2372·6	25	94·9

Eighty Grain Standard.

6	Syenite, gy.		10–14			154·2	2	77·1
7	Basalt, br.		19–35			1544·8	20	77·2
8	Basalt, br.		26–33			1545·9	20	77·3
9	Silicate, gy.		12–42			7747	100	77·5
4780	Basalt, gy.		113			1942·7	25	77·6
1	Basalt, bk.		37–38			1961·2	25	78·4
2	Syenite, gy.		38			3138·7	40	78·5
3	Basalt, br.		33	1573·5	—	1573·8	20	78·7
4	Basalt, br.		20–165	1502·9	—	1593·0	20	79·6
5	Limestone, w.		2–41	1601·0	—	1603	20	80·1
6	Basalt, br.		165			1621·7	20	81·1
7	Basalt, br.		38–43			1632·3	20	81·6

77. DEFENNEH (Bronze).

	No.	Form.	Present.	Ch.	Ancient.	÷	Unit.
The Egyptian kat decimally divided, with binary sub-divisions	4788	14	7·0	·4	7·2	20	144
	9	12	7·6	·5	7·3	20	146
	4790	25	8·0	1·0	7·4	20	148
	1	44	6·9	·5	7·4	20	148
	2	27	8·3	1·2	7·5	20	150
	3	12	14·3	1·2	13·9	10	139
	4	25–101	13·9	·1	14·0	10	140
	5	62	14·3	·2	14·3	10	143
	6	25–46	14·5	·5	14·4	10	144
Mark I	7	25	14·5	·4	14·5	10	145
	8	12–13	14·9	1·2	14·7	10	147
	9	17	15·2	·4	15·2	10	152
	4800	13	15·3	1·7	15·2	10	152
	1	52	27·6	·8	27·6	5	138
	2	50	26·7	2·6	27·7	5	138
	3	52	28·2	1·2	28·2	5	141
	4	52	28·4	·7	28·3	5	146
Mark ψ	5	51	29·9	·3	30·2	5	151
Basalt	6	52	29·9	1	30·9	5	154
	7	40	67·0	2·5	69·5	2	139
Basalt	8	33–101	70·6	1·4	70·8	2	142
Alabaster	9	19–35			71·4	2	143
	4810	33	70·4	1·2	71·6	2	143
	1	66	297·8	5·4	296·	½	148
The Egyptian kat binarily divided continuously	2	14	5·1	·9	4·6	32	147
	3	13–43	9·0	·9	9·1	16	146
	4	33	9·5	·6	9·3	16	148
	5	20–27	18·3	1·7	18·2	8	145
	0	52	18·1	·8	18·5	8	147
⊥ mark	7	25–101	18·3	·4	18·5	8	147
	8	26	35·4	·5	35·5	4	142
	9	26	35·8	·7	35·5	4	147
	4820	17–29	37·3	·9	37·2	4	149

	No.	Form.	Present.	Ch.	Ancient.	÷	Unit.
Kat trinarily divided, with binary subdivisions	4821	33	6·1	·3	6·0	24	144
	2	42	6·3	·3	6·0	24	144
	3	11-42	11·6	·6	11·6	12	139
	4	12-165	11·7	·3	11·6	12	139
Basalt	5	20-27			11·9	12	143
	6	40	11·7	·3	12·0	12	144
	7	26-27	12·2	·4	12·2	12	146
	8	59	12·2	·3	12·3	12	147
	9	52	23·9	1·6	23·5	6	141
	4830	165	16·7	7·2	24	6	144
	1	40	23·7	·9	24·0	6	144
Syenite	2	33			24·3	6	146
	3	52	24·2	·3	24·3	6	146
	4	58	49·2	1·4	49·0	3	147
Assyrian shekel divided in *sikhirs* (⅛) and binary subdivisions	5	3	4·9	·2	4·9	24	118
	6	12	11·2	1·5	9·7	12	116
	7	16	10·2	·3	10·3	12	124
	8	27-33	10·5	1·2	10·5	12	126
	9	25	11·1	·3	10·8	12	130
	4840	14	21·1	·8	20·9	6	125
	1	40	22·3	2·8	21·1	6	127
	2	51-52	20·9	·5	21·2	6	127
	3	38	21·0	1·0	21·2	6	127
	4	50-52	21·0	·9	21·3	6	128
	5	36	43·3	·5	43·4	3	130
	6	33-101	43·2	·7	43·5	3	130
	7	33-36	59·2	1·7	60·7	2	120
	8	45	60·5	·5	61·0	2	122
	9	25-43	63·2	1·2	63·4	2	127
	4850	33	85·3	1·3	85·6	1	128
Assyrian shekel decimally divided, with binary multiples	1	165	13·2	·4	13·2	10	132
	2	126	14·0	·7	13·3	10	133
	3	40	25·6	·7	25·7	5	128
	4	12	25·4	·5	25·9	5	129
	5	52	26·4	1·5	26·1	5	130
	6	26	39·4	·7	39·1	½	130
	7	62	39·5	·5	39·6	½	132
Attic drachma divided in obols (⅙) and binary multiples	8	26-33	22·2	·3	22·3	3	66·9
	9	165	22·3	·8	22·5	3	67·5
	4860	52	20·2	3·4	22·8	3	68·4
	1	28-101	32·6	·5	32·9	2	65·8
	2	52	32·8	·8	33·0	2	66·0
	3	26-43	33·2	·5	33·1	2	66·2
	4	53	33·5	·8	33·1	2	66·2
	5	168	45·5	·8	45·7	⅓	68·6
	6	37	65·2	·6	65·8	1	65·8
	7	36	68·4	1·6	68·2	1	68·2
Attic drachma binarily divided continuously	8	12	8·6	·8	8·4	8	67·2
	9	126	8·3	2·0	8·7	8	69·6
	4870	62	17·1	·9	16·8	4	67·2
	1	49-52	17·0	·6	17·6	4	70·4
Phœnician shekel binarily divided continuously	2	52	27·1	·5	27·4	8	218
	3	11-14	52·5	1·5	52·2	4	209
	4	39-40	52·5	·8	52·3	4	209
	5	26	55·6	1·0	55·8	4	223
	6	26-36	55·9	1·1	56·0	4	224
	7	37-38	110·2	1·2	110·8	2	222
	8	26-36	118	6	114	2	228
Æginetan drachma and diobol	9	Tortoise	30·8	·5	31·3	3	93·9
	4880	27-33	93·4	2·6	94·8	1	94·8
	1	36-37	100	1·8	100·6	1	100·6
Æginetan diobol binarily divided (or Assyrian shekel binarily divided)	2	43	4·0	·2	4·0	24	96
	3	165	7·8	·4	7·8	12	94
	4	26-27	8·0	·3	7·9	12	95
	5	26	8·4	1·2	8·0	12	96
	6	26	15·5	·4	15·5	6	93
	7	58	15·5	·2	15·7	6	94
	8	11	31·0	1·0	31·2	3	94
	9	26-40	27·1	7	32	3	96
	4890	12	36·0	4	32	3	96
	1	25-28	31·6	·8	32	3	96
Eighty-grain standard	2	17	12·1	2	10?	8	80
	3	59	20·4	1·1	19·9	4	79·6

	No.	Form.	Present.	Ch.	Ancient.	÷	Unit.
binarily divided	4894	33	19·8	·2	20	4	80·0
	5	36	20·5	·4	20·5	4	82·0
	6	33	40·1	·6	40·3	2	80·6
	7	62	40·6	·4	40·6	2	81·2
	8	33	40·6	·5	41·1	2	82·2

78. The bronze weights from Defenneh require some special notice. They are worthless for showing the variations of the standards, owing to the extent to which they are altered by corrosion, and the consequent uncertainties of their exact amounts. But as we have no other series of minute weights they are of great interest as showing the systems of subdivision of the standards. To this end they are classified here according to the fractions which they show; and for clearness the division of the unit is stated, instead of the multiplier as in the other lists. In order to avoid any bias in attributing these to known systems of weight, I began by grouping together those weights which were evidently connected, up to 30 grains in weight; thus it was quite unknown to what systems these groups might belong without examining their relations to others. After forming these groups of smallest weights (among which I only observed the decimal fractions of the kat), the weights over 30 grains were successively added to the groups with which they were connected, until the groups emerged from their nameless and unconnected condition into clear relationships to the various well-known systems. Thus there was no attempt at trying to fit the weights to what was already known, but the results here came from the natural grouping of the weights quite independently of previous results. That every group is simply connected with some known system is a proof of the reality of the groups, and of the attributions not depending on casual coincidence. The decimal division of the kat is what might be expected from its decimal multiplication; its binary division is a very general mode in making any small weights, as it is the readiest way of forming fractions; and its ternary division is already noticed in Defenneh weights (see *Tanis II.*). The Assyrian shekel is normally divided into 6 sikhirs; but it seems to be also decimally divided, like its decimal multiplication in Egypt. The Attic drachma appears in oboli as usual, and also in continuous halving. The Phœnician shekel is well known to be divided in quarters, or drachmæ. The Æginetan may be here found in oboli, but it is hardly probable to find so many examples, and hence these are, perhaps, to be attributed to the binary divisions of the Assyrian shekel. The 80-grain unit was binarily divided like the others; and this division was only a

continuation of the binary division of the 10 Assyrian shekels from which it was derived.

Last year I deduced from the weights of Memphis that a standard was formed of 2 utens, and I termed it the Memphite Bi-uten. I had not then noticed that such a standard was known to have been used by the Egyptians; in the offerings in the temple of Heliopolis —not far from Memphis—objects were weighed by the *Nusa* weight, which Dr. Birch states was equal to 2 *tens* or utens, and was used for metal (see *Records of the Past*, vi. 68). This exactly confirms my result from the classification of the Memphite weights.

NOTE.

The later work in 1888–9 has opened the pyramid of Hawara, which differs from any other known in the arrangement of it. The funereal furniture of Amenemhat III. and his daughter Ptahnefru was found inside.

The tomb of Tetbastaufankh has supplied many complete sets of amulets, the positions of which on the mummies have been recorded. Also a great number of large ushabtis, and the sarcophagus, of Horuta his father.

The great tombs of the XIIth dynasty, later used for crocodile burials, have been excavated.

At Illahun, many burials of the XXIIIrd dynasty have been found in tombs of the XIIth dynasty.

At Tell Gurob, a town entirely of the XVIII.–XIX. dynasty has been excavated, and many objects found.

Full details of this work will appear in the next year's volume.

HAWARA, *January*, 1889.

In Dr. Leaf's new edition of the Iliad he further notes on the manuscript described in this volume that (1) line 694 "The text must have had ἀστήρισεσθαι with Zenodotos 707. . . . It is clear that (our scholiast) drew from Didymæan sources, and the tradition is thus carried back some five hundred years." (2) "The obelos is omitted on 791–3, 795."

INDEX.

A.

Accents in papyrus, 24
Amenemhat I. reclaimed in Fayum, 2
Amenemhat III. work in Fayum, 2
——, built labyrinth, 6
——, late prayer for, 23
Ameni-senb-nebuu, 10
Ammonarin, 17
Ankh-fen-mut coffins, 9, 14, 23
Ankhrui, sarcophagus of, 9, 21
Aphrodite, 17
Arsinoe, queen, worship of, 58
——, town, ruins of, 1, 56
——, temple, 2, 56
——, inscription at, 23
——, pylon, 57
——, pro-temenos, 57
——, levels, and history, 57, 58
Artemidoros, 18

B.

Bags of sawdust, 10
Biahmu, work at, 3
——, colossi, 2, 3, 54
——, inscription at, 23, 55
——, nature of remains, 54
——, evidence for restoration, 54
——, size of colossi, 55
——, levels, 55
Bird on wheels, 11
Block-printing, 29
Bodkin, wooden, 11
Borders, gilt, to portraits, 19
Botany. *See* Plants.
Branding-iron, 11
Bronze knives, 11
Brushes, 11
Bull's-eye lenses, 12

C.

Canopic jars, 9, 23
Captives on mummy cases, 16
Carpenter's marks, 23
Cartonnage, 14–17
—— with portraits, 17
Casket, ivory, 12
Cemetery of Hawara, 8
——, mastabas, 8
——, tomb wells, 8
——, tomb of Tetbastaufankh, 8
——, pit tombs, 8
——, portrait tombs, 8
Cemetery, early sepulchres, 10
——, raised tombs in chambers, 11
——, paintings on tombs, 11
See Mummies.
Chapels over tombs, 10
Charm on wax tablets, 12
Coffins. *See* Mummies.
——, pipe, of terra-cotta, 17
Coin moulds of forgers, 3
—— catalogue, 13
—— offerings in tombs, 13
Cork soles, 52
Crocodile burials, 6, 10
—— imitations, 10
Crocodilopolis, 1
Cross, pagan use of, 18

D.

Dates of portraits and mummies, 17, 19, 21
Dēmōs, 19, 20
Demotic names on coffins, 23
Deposit of mud in Fayum, 2
Didyma, 15
Diogenes, 20
Dolls, rag, 12
——, pottery, composite, 12
Drill, bow form, 11
——, twist form, 11
Dusebek, 23

E.

Ebers, Dr., on portraits, 40
Embroideries on mummies, 21
Encaustic paintings, nature of, 38
—— derived from Egypt, 38
——, history of, 38, 39
Exhibition of antiquities, 3
Eyes inlaid in cartonnage, 17

F.

Fayum, nature of, 1
——, early condition of, 2
——, deposits in, 2
——, reclamation of, 2
Fire altars, so-called, 10
Flesh-hook, iron, 11
Flint knives, 58
Flowers on mummies, 15
Food found in tombs, 10
Frame of picture, 10
Fruit-trees of Egypt, 48
Funereal feasts, 10
—— offerings of coins, 13

G.

Garlands, 15, 51
Glass found, 11, 12
—— lenses, 12
——, wheel-cut patterns, 12
Gods named at Hawara, 21–23
Greek artists, skill of, 42
—— workmen, 15, 16
Greeks in Fayum, 20, 29

H.

Hair-net, with casket, 12
——, square mesh, 12
Hair-pins, 13
Hawara, work at, 3
——, portraits discovered, 3
—— pyramid examined, 3
—— cemetery (*see* Cemetery), 8
Herpa, 23
Hieroglyphic inscriptions, 21
Hieroglyphics reduced to nonsense, 15, 16
Hook for shaduf, 11
—— and staple of iron, 11
Horuta, 9

I.

Iliad, papyrus, 24
——, accents, 24–27
——, scholia, 24–27
——, critical marks, 24, 27
——, portions remaining, 25
——, readings, 26
Imagines, 40, 41
Incense burners, 10
Inscriptions, hieroglyphic, 21
——, Greek, 37
Iron tools, 11
Isarous, 20
Ision, 16
Ivory casket, 12

J.

Jewellery represented in cartonnage, 16
—— —— on portraits, 19, 43
——, ages of, 19

K.

Knives, iron, 11
——, bronze, 11
——, flint, 58

L.

Labyrinth, work at, 3
——, position of, 4
——, site of, 4, 5
——, large area of, 5
——, not of brickwork, 5
——, mistaken by Lepsius, 5
——, section of, 5
——, limits of, 5, 6
——, pavement recently quarried, 6
——, levels in, 6
——, ancient accounts of, 6
——, restoration of, 6, 7
——, account of Diodoros, 6
——, —— of Herodotos, 7
——, —— of Strabo, 7
——, plan unlike other temples, 7
——, not a maze, 8
Lamp with cover, 10
Leaden urn, cinerary, 11
Leather-worker's needles, 11
Lenses, glass, 12
Locks, wooden, 11

M.

Mallet, 11
Mareis, 16
Medinet el Fayum, 1
Mirror, toy, 12
Moiris, Lake, 1, 2
Mummies, decoration of, 14
—— in box coffins, 14
—— elaborately bandaged, 14
——, dating of, 14-20
——, dummy, 15
—— injured before burial, 15
—— kept above ground, 15, 16
——, beginning of portraiture, 16
—— modelled bust-case, 16
——, red stuccoed with portrait, 18
—— with portraits, 20
—— buried immediately, 21
See Portraits.

N.

Nationality of portraits, 20
Needles, leather-worker's, 11
Nekht-ra, 23
Nile, ancient state of, 1
——, former flow into Fayum, 1, 2
——, deposits in Fayum, 2

P.

Pafui, sculpture of, 8
Paint-saucers, and analysis, 11
Paintings on tombs, 11
Papyrus plaiting on vases, 9
—— with mummy, 16
—— of Timaios (?) 28
—— tax-lists, 29, 33
—— receipt, 30
—— copies of deeds, 31
—— letters, 32
—— taxes, 33
—— house accounts, 34
——, list of, 36
See Iliad.
Peg for builder's line, 11
Penast, 23
Pernefankh, 10
Persian style, box in, 12
Personal assistance in the work, 4
Peduhorpsienast, 23
Picture frame, 10
Plants found previously in Egypt, 47
——, preservation of, 47
—— now extinct in Egypt, 48
—— for food, 49
——, weeds, 49
——, flowers, 51
——, changes in, 52
——, list of, 52
Pliny on encaustic painting, 38
Portraits, earliest style, with cartonnage, 17
——, date of, 17, 40
—— on canvas, 17, 42
—— in *tempera*, 18
—— in wax, methods, 18, 38
——, rewaxing of, 19
——, with gilt borders, 19, 42
—— painted after death, 20, 41
—— in encaustic, 38, 39
—— mentioned by writers, 38, 41
——, examples already known, 39, 40
——, list of, from Hawara, 42
Pottery, late Roman painted, 13
Preservation by waxing, 9, 19
Printing, block, 29

R.

Ra-en-mat, name used in late times, 8, 11, 23
Receipt of Quintus Senas, 30

S.

Sandals, papyrus, 12, 13
Sarapas, 20
Sarcophagus, great one. *See* Ankhrui.
—— of stone. *See* Tetbastaufankh.
—— of acacia wood, 9
Saucers of paint, 11
Sawdust in bags, 10
Sebek, 21, 22
Sebekneferu, 6
Sedan chair, model, 12
Seeds, non-germination of, 53
Socks with caskets, 12
Stamp, printed, 29
Syros, 16

T.

Tablets, waxed, 12
Taper-holder, 12
Ta-she, name of Fayum, 1
Tetbastaufankh, tomb, 8, 9
——, father of Ankhrui, 22
Tethamen, 23
Textiles, 21
Thermutharin, 18
Thumbstall, leather, 11
Tiapos, 20
Titos, 16
Tombs. *See* Cemetery.
Tools, 11
Toys, 11, 12
——, dated, 12

V.

Vases of XXVIth dynasty, 9

W.

Waxed tablets, 12
Waxing stucco work, 9
—— paintings, 12, 19
Weights, Memphis, 59
——, Delta, 61
——, Defenneh, 61
——, small divisions of units, 61, 62
Whipping-tops, 11
Working out of antiquities, 4
Workmen selected from a distance, 3
——, ancient Greek, 15, 16
Wreaths and garlands, 51

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INSIDE OF LID, OVER THE HEAD.

INSIDE OF LID, OVER THE FEET.

OUTSIDE OF LID, HEAD END.

HAWÂRA. LID OF SARCOPHACUS.

SIDE OF LID

INSIDE OF THE BODY. II.

Inside of body, left side.

Inside of body, right side.

Inside of body, at feet

Inside of body, at head.

Around lid inside

On bottom of sarcophagus, outside.

W.M.F.P.

continued in column V and then in column VI

continued in column V and then in column VII

continued in column V and then in column IX

continued in column V and then in column VIII

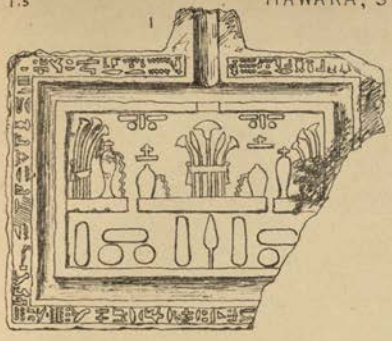
continued in columns VI, VII, VIII, IX

W.M.F.P.

On gilt bands.

12 Pectoral.

1



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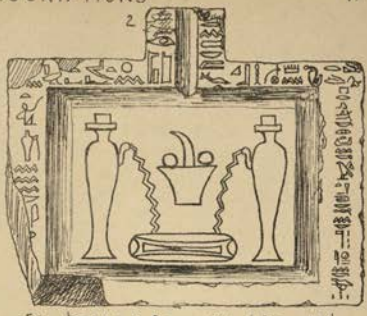

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5a (height of column not to scale)

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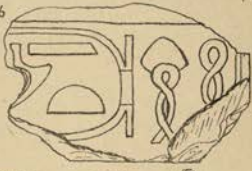

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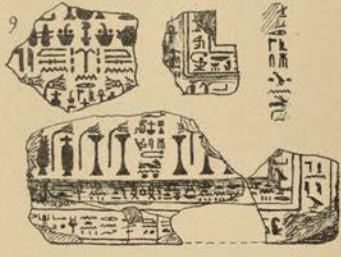

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8

Fragments built into later tomb shaft.

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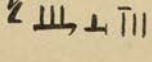
11

part of figure & title of offerings

Piece of alabaster canopic Tomb-equipment

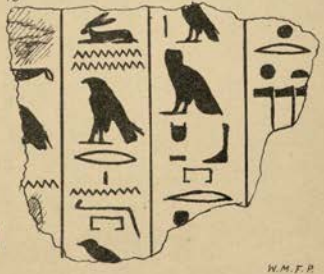
12

14 On a jar.



Fragment of crocodile chapel.

13



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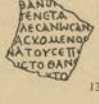

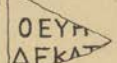

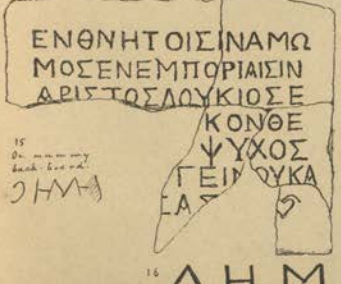

ΔΗΜΗΤΡΙΟC LI

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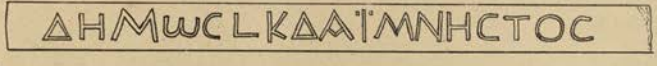

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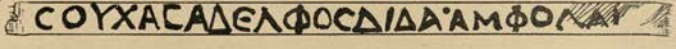

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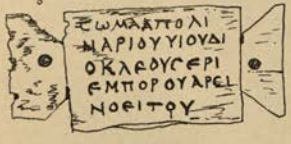

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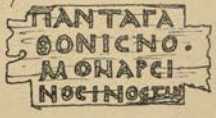

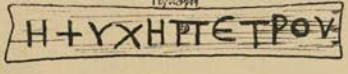

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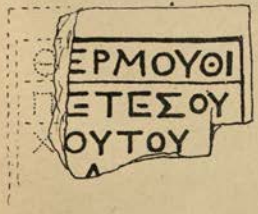

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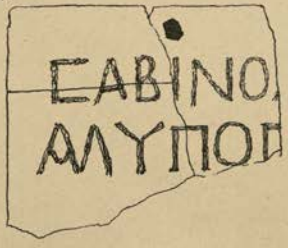

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H.M.F.P.

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Late Ptolemaic

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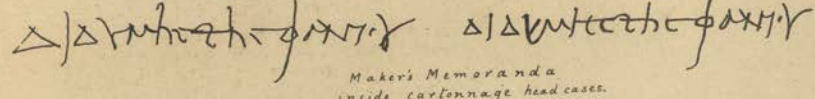
1st cent. A.D.



Maker's Memoranda inside cartonnage head cases.

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circ. 120–140 A.D.

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circ. 150–250 A.D.

W.M.F.P.

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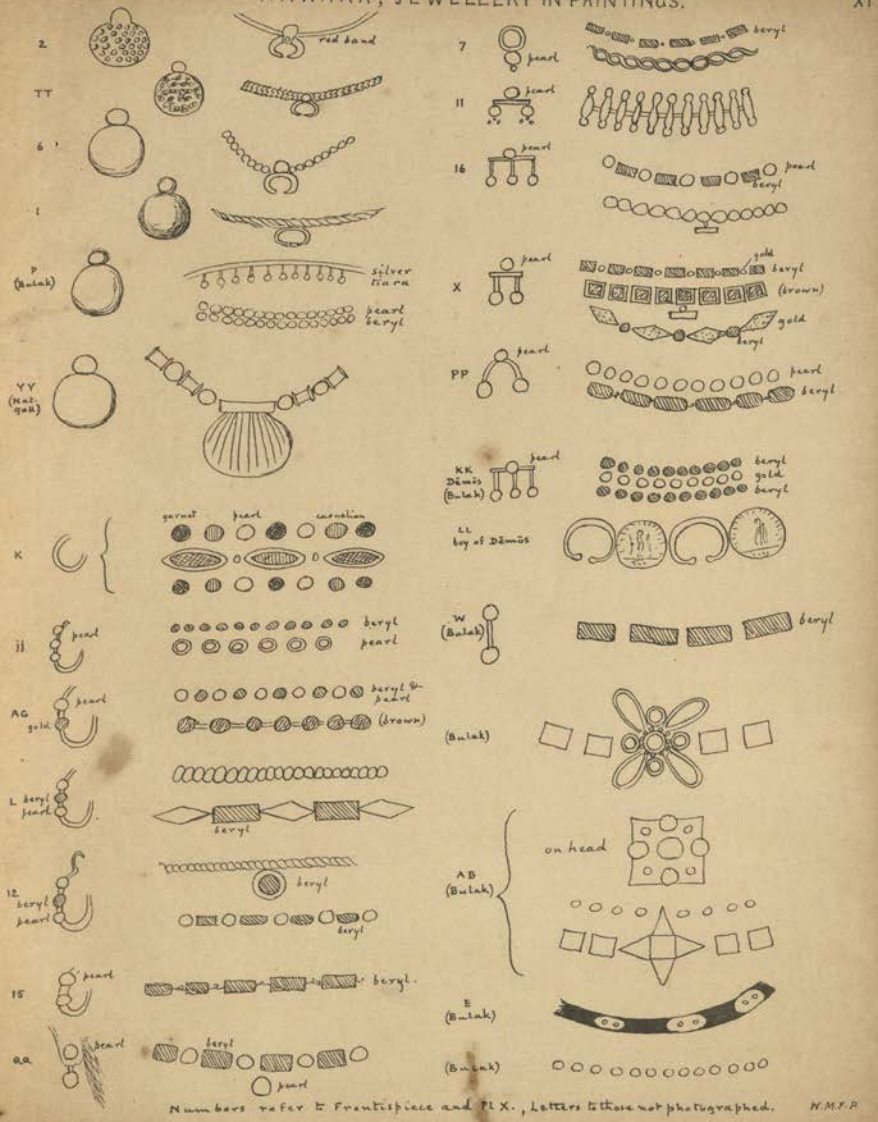
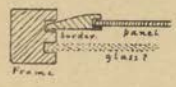
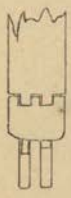
HAWARA, JEWELLERY IN PAINTINGS.

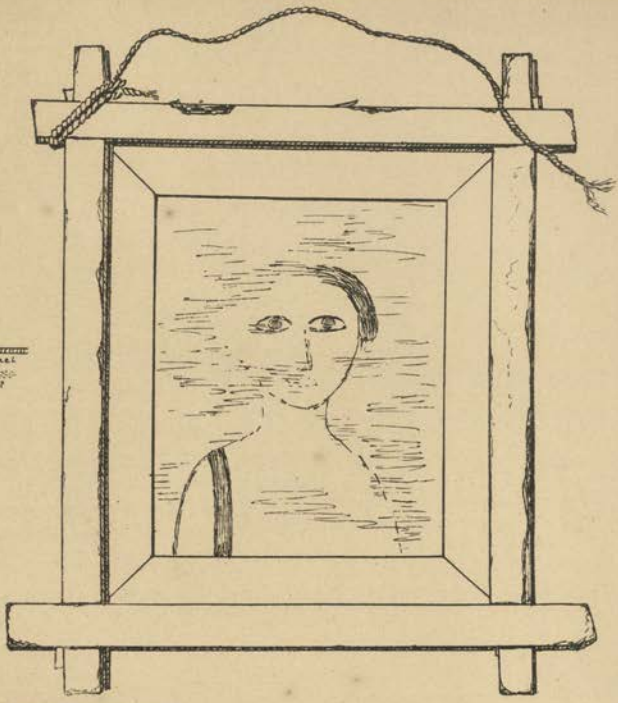


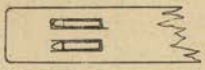
Numbers refer to Frontispiece and Pl X., Letters to those not photographed. W.M.F.P.

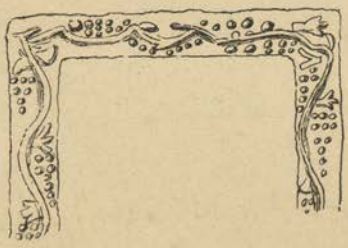
HAWARA, PICTURE FRAME AND BORDERS.



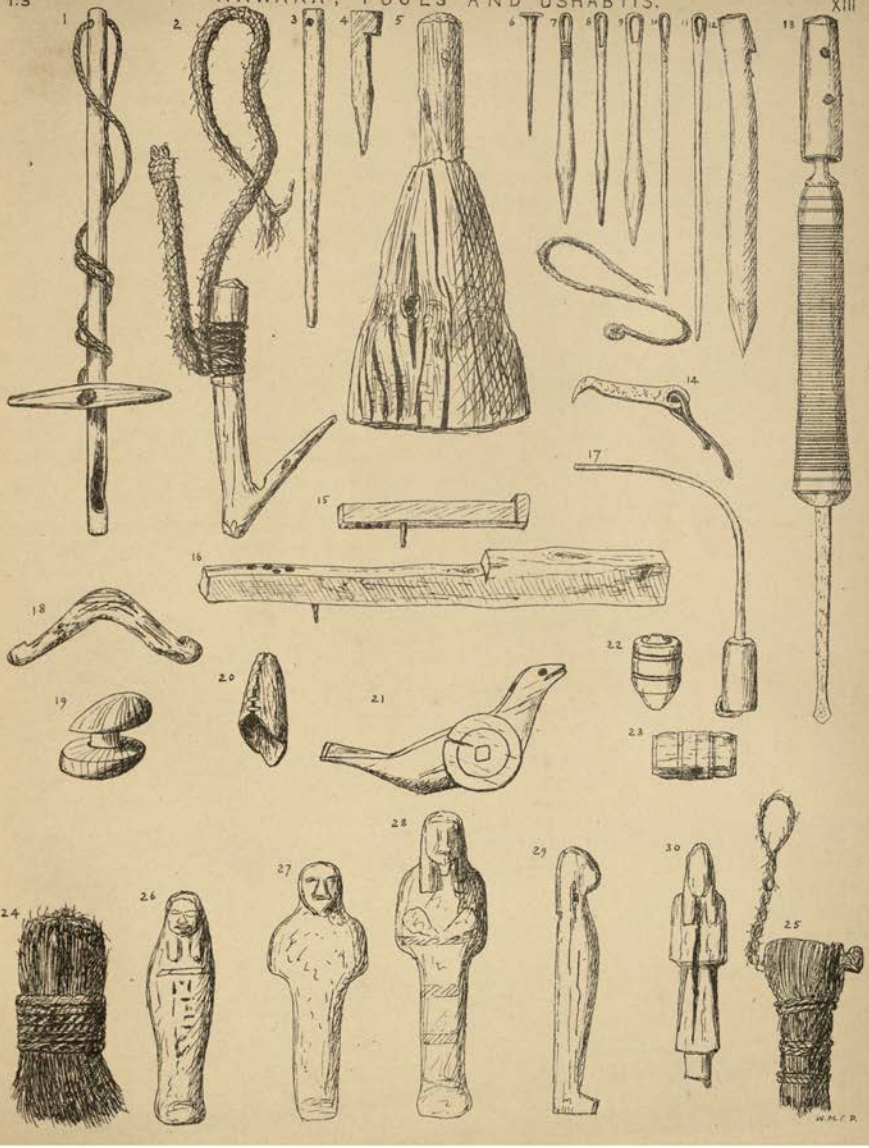


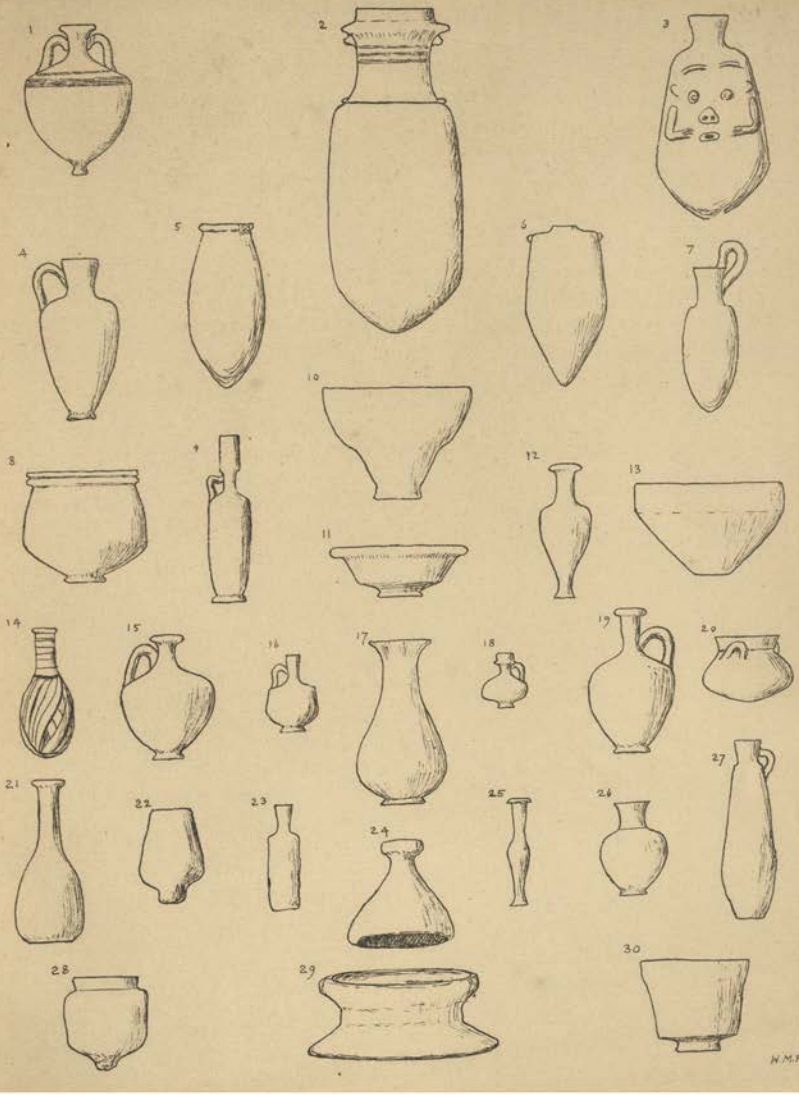






HAWARA, TOOLS AND USHABTIS.

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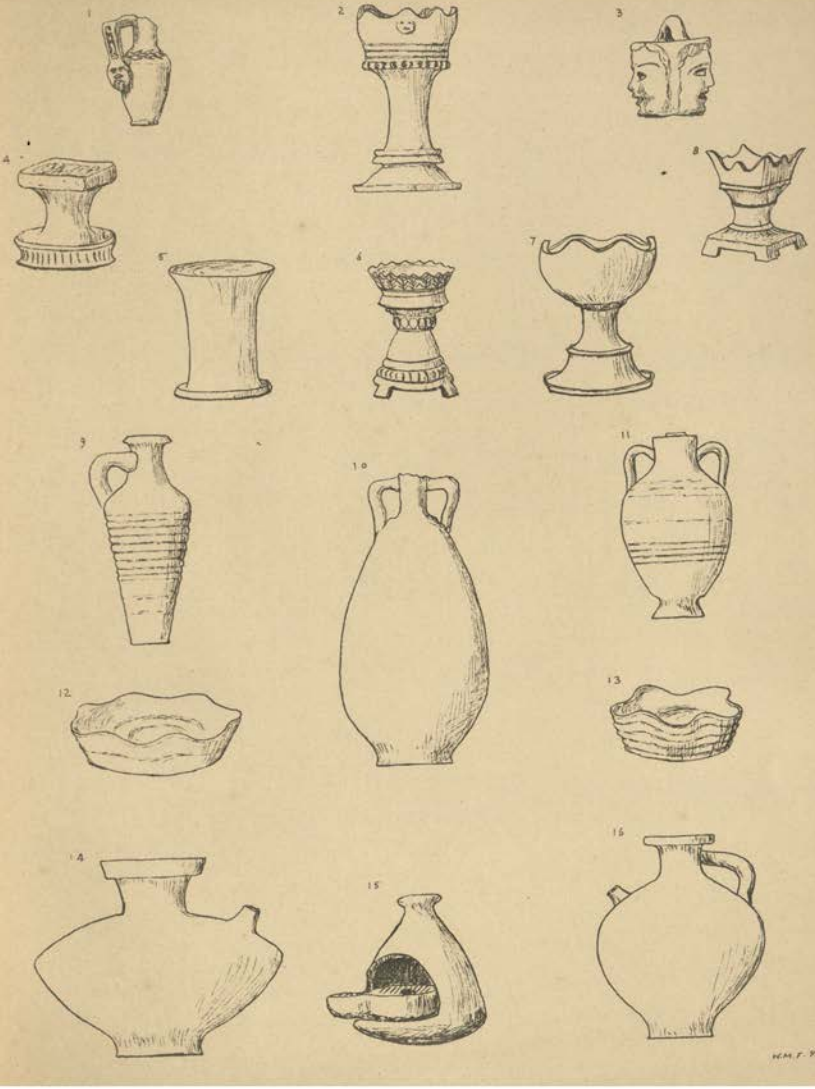
W.M.F.P.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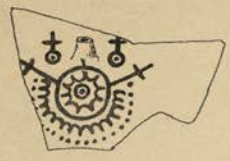
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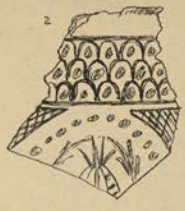
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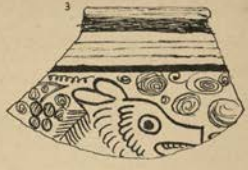
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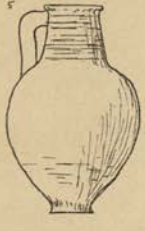
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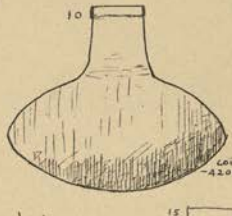
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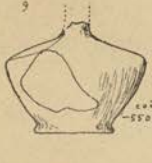
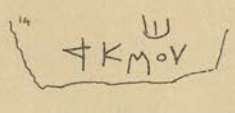

9
coins ~550 A.D. ?

11

12
coins ~520 A.D.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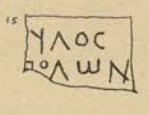
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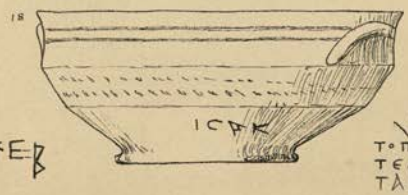
coins ~520 A.D.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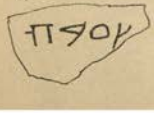
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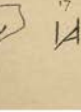
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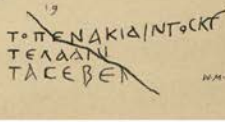
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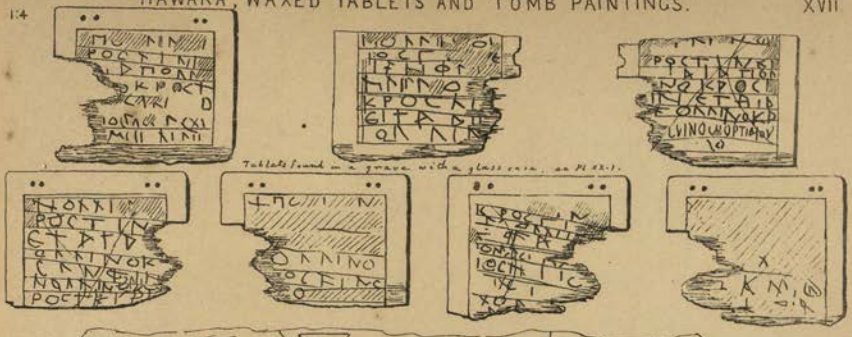
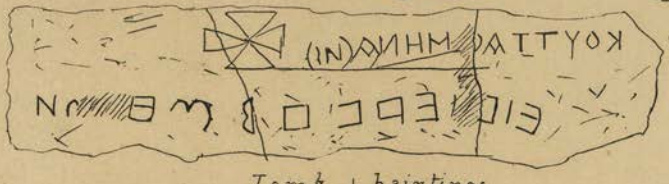


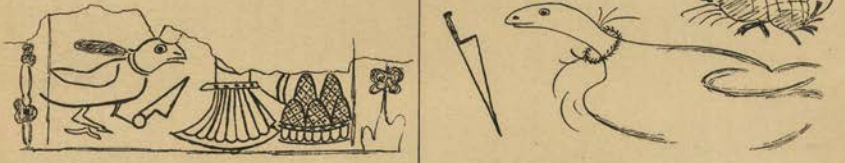
Tablets found in a grave with a glass cup, as Pl XLI.



Coptic inscriptions on limestone pavement

Tomb paintings.

2



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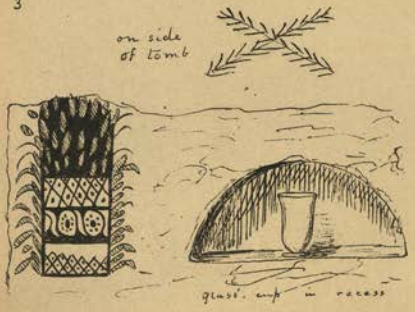

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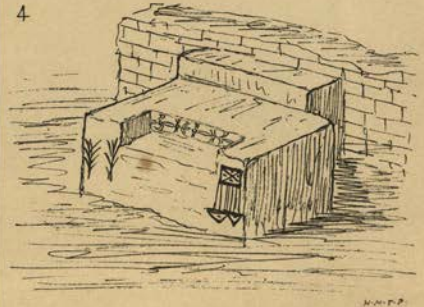
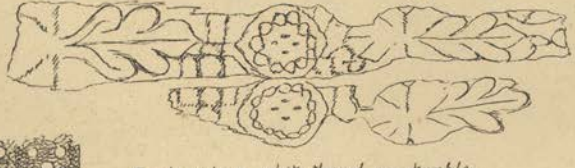


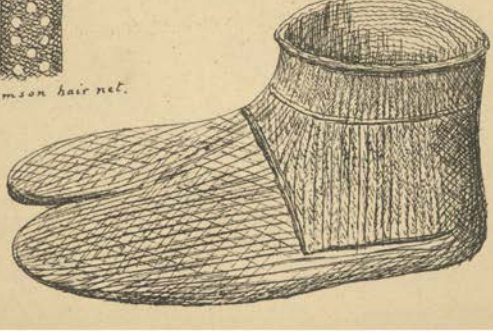
Part of casket covered with ivory panels

Panels on ends of the casket.



Embroidery, white thread on purple.

Pattern of crimson hair net.



Knitted sock of thick brown wool.

W.M.F.P.

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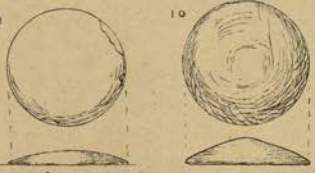
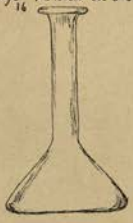
HAWARA, GLASS, TOYS, &c.

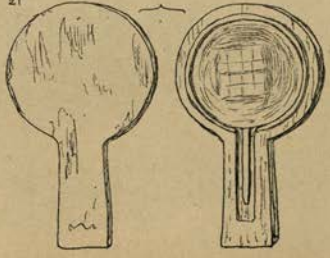
Mud figure found on a papyrus. A charm?



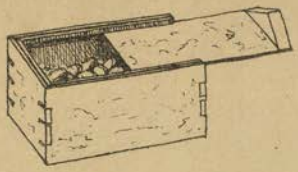
Glass Condensing Lenses.

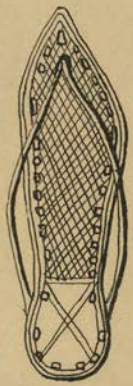
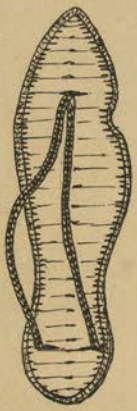
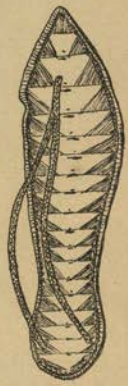
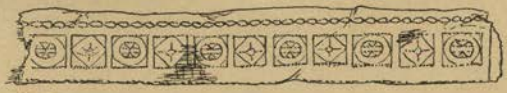
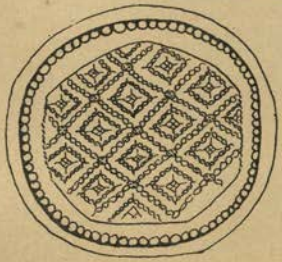
Set of Toys found in one tomb





H.M.F.P.



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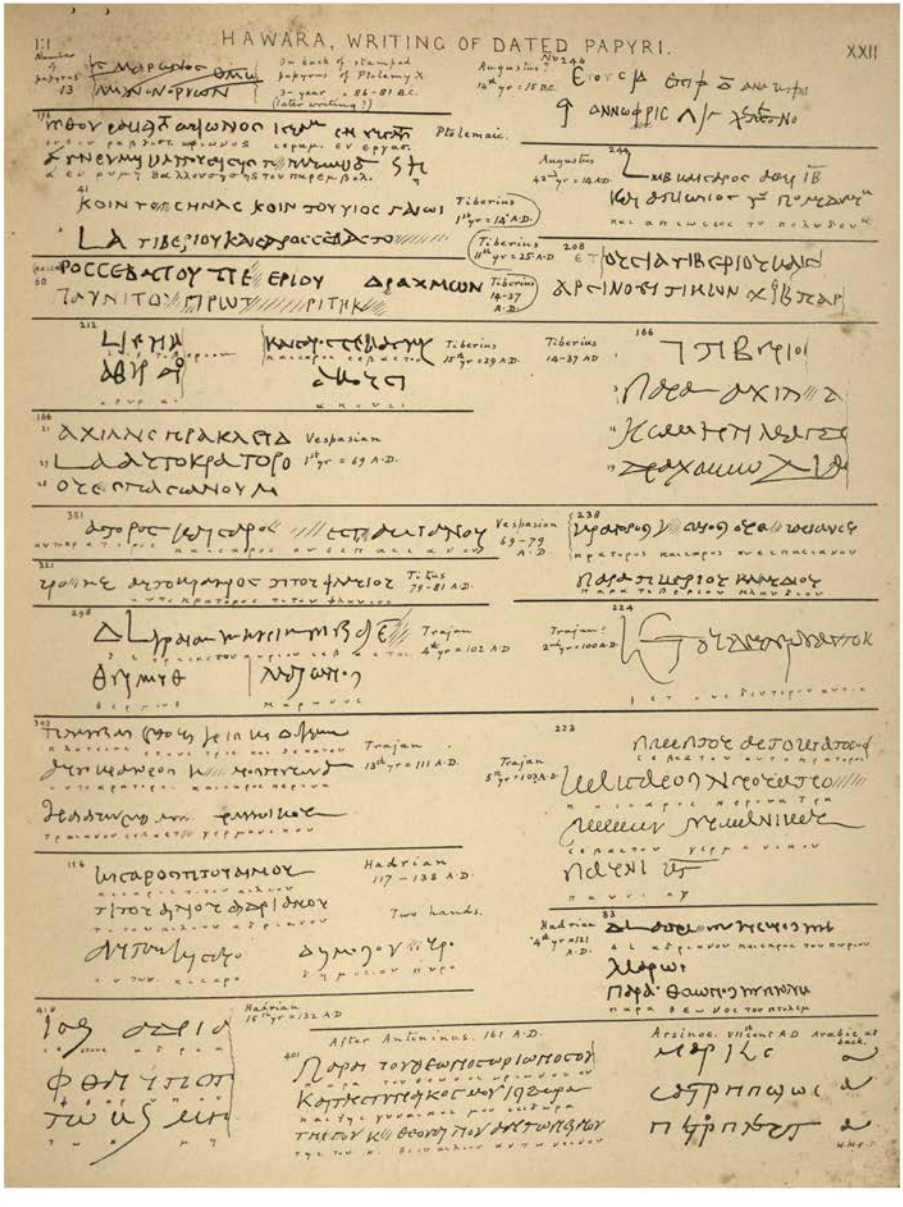


439 ΔΑΘΡΟΟΙ 765 ΟΙΕΤΕΑC

585 ΟΙΤΥΛΟ 841 ΚΩΔ 832 ΘΥΔΕΟΥC

545 ΕΠΟΝΤΟ 682 ΟΙ ΟΙ

752 ΠΡΟΪΕΙ 792 ΪΖΕ 850 ΟΥ 588 ΗΙCΙ

415 ΔΗΪΟΙΟ 824 ΫΠΑΙ

877 ΔΙΝΗΕΝΤΟC 745 ΘΥΜ

ΑΛ 537 ΑΥΤΑΙ 726 ΑΡΧΟΝ

ΕΝ 780 ΩCΕ 700 ΔΡΥΦΗC

CA 491 ΤΑΥΡΟC

ΤΗ Ξ Ξ Ψ Ψ Ξ and Ψ, which do not occur in the photograph. ΙΛΙΑΔΟC

631 ΑΓΕ 724 ΛΕΝ

Corrections made in the papyrus.

Β

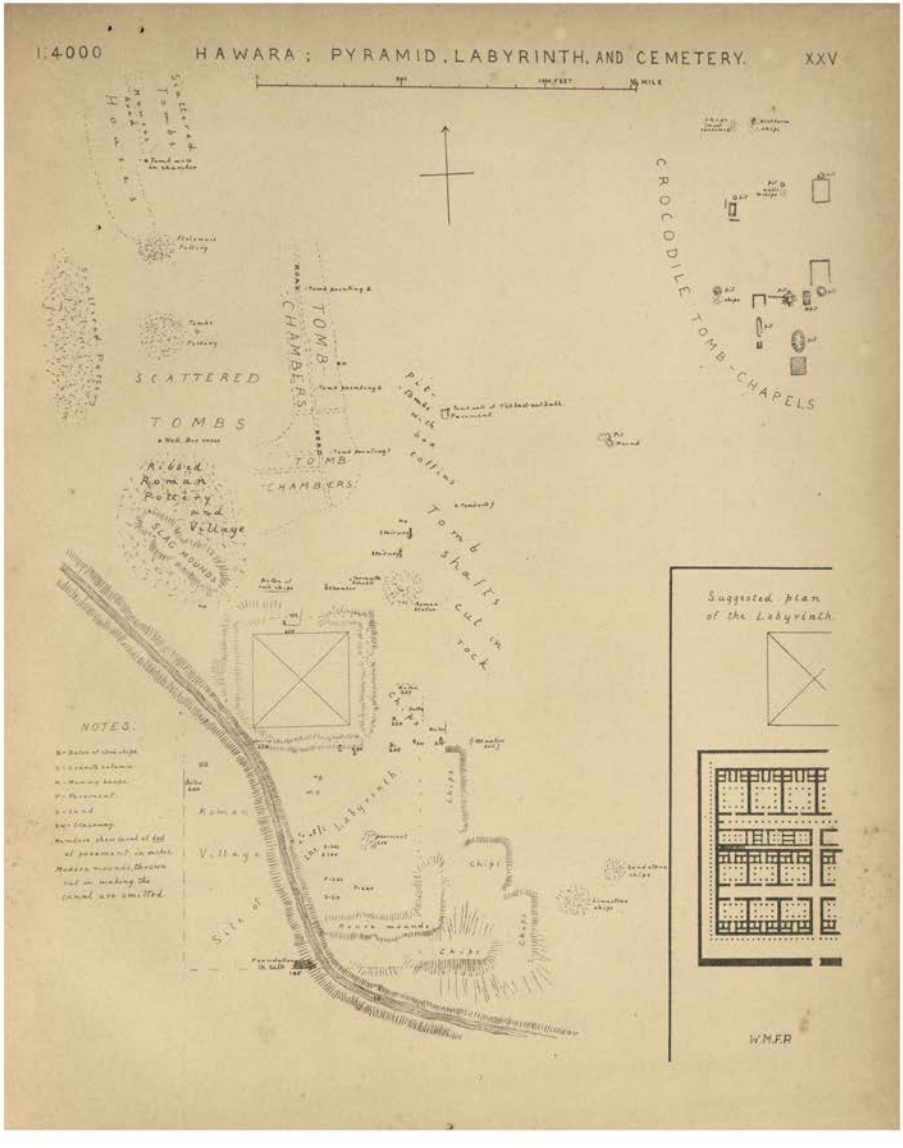
Ornament at beginning of last four lines.

Marginal Signs to lines.

Colophon of second book.

1:1 Varieties of Late Roman and Vandal coins, &c, mostly unpublished.

1:4000 HAWARA; PYRAMID. LABYRINTH. AND CEMETERY. XXV

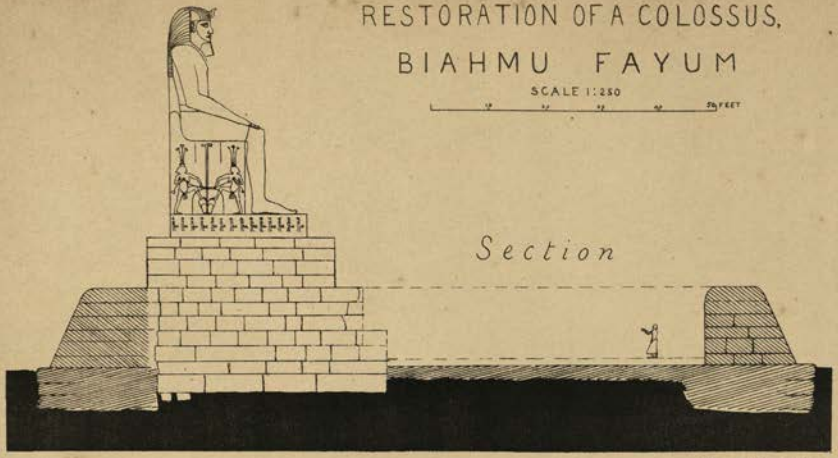


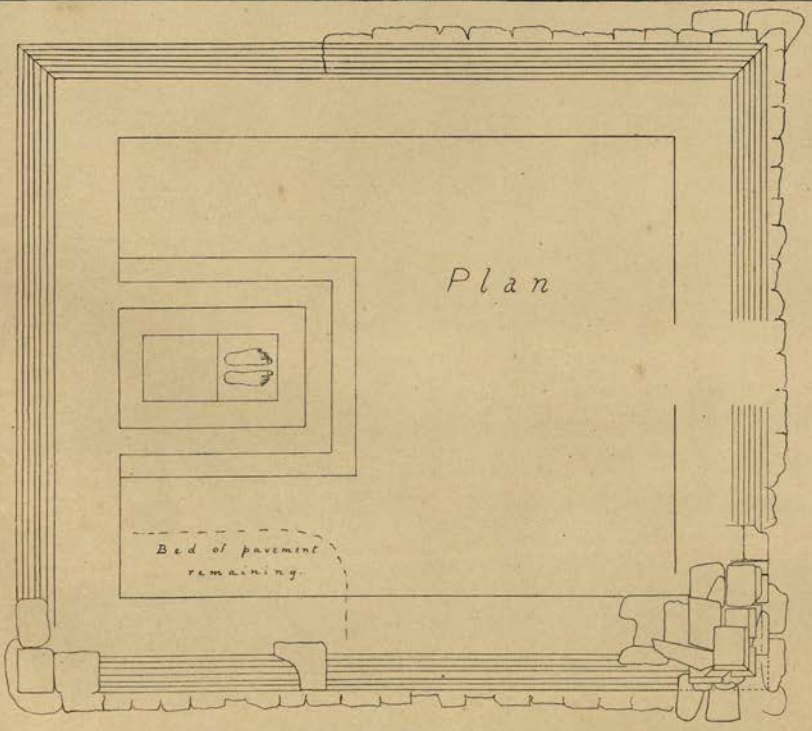
RESTORATION OF A COLOSSUS.

BIAHMU FAYUM

SCALE 1:250

50 FEET





1

Fragments of Colossi

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7 standard of Nymphaite Nome.

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10 Pylon Arsinoe

Colonnet in Temple 12 Hawara

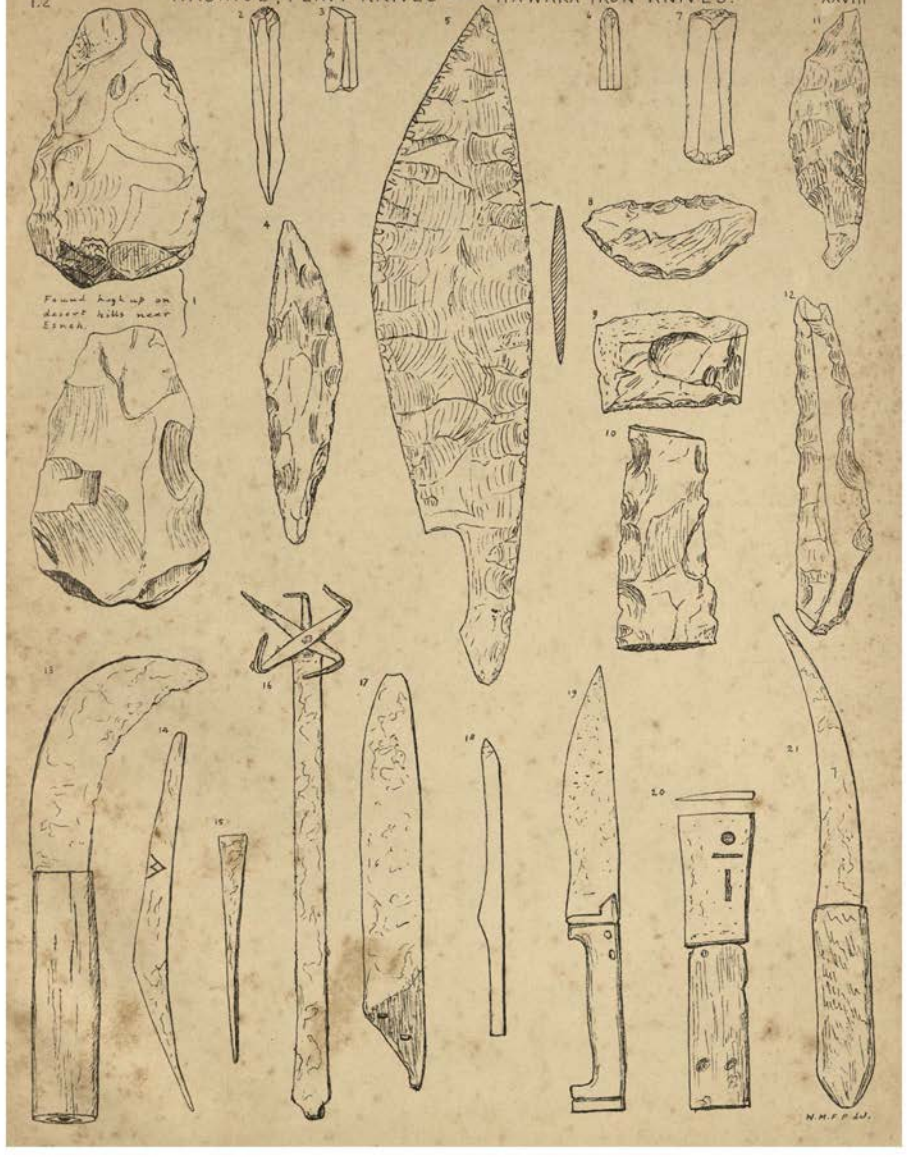
11 Pylon Arsinoe

1:7

13. Temple Arsinoe

W.M.F.P

ARSINOE, FLINT KNIVES — HAWARA IRON KNIVES.



1:2000

ARSINOE, THE TEMENOS.

XXIX

00082098

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on 10 August, 2018